

Genus Philypnodon Bleeker

Philypnodon BLEEKER, Arch. Neerl. Sci. Nat. Harlem, vol. 9, p.

301, 1874 (Type Eleotris nudiceps CASTELNAU, orthotypic.)

Gymnobutis BLEEKER, op. cit., p. 304. (Type Eleotris gymnocephalus  
STEINDACHNER, orthotypic.)

Ophiorrhinus OGILBY, Proc. Linn. Soc. New South Wales, vol. 21, pt.  
4, p. 745, May 31, 1897. (Type Eleotris grandiceps KREFFT, orthotypic.)



Body rather elongate, compressed posteriorly, predorsal broad and flat, body rounded behind. Head very large, strongly depressed, much wider than deep. Snout short, very obtuse. Eyes sublateral. Maxillary narrow, posterior end exposed and linear. Mouth large, little oblique, lower jaw much longer. Lips thin. Premaxillaries little protractile. Jaws with broad band of cardiform teeth, all fixed. Lower pharyngeals forming together subtriangular patch, armed with small, stout, hooked teeth, few at apex and along symphysis somewhat enlarged. Nostrils moderately separated, anterior valvular. None of head bones armed. Gill openings extend forward below or before mouth angle. Isthmus about half wide as interorbital space. Gill rakers short, rather slender, mostly serrulate. <sup>u</sup>Pseudobranchiae present, small. Branchiostegals 6. Vertebrae 30, of which 17 caudal. Scales moderate, adherent, much larger on tail than on trunk. Head, except portion of occiput, naked. Scales deeply embedded, cycloid and smooth in front, imbricate and feebly ciliated behind. Muciferous system of head well developed.

First dorsal with 7 spines, second dorsal with spine and 9 or 10 rays, spines flexible. Anal with spine and 9 or 10 rays, below second dorsal. Caudal rounded. Pectoral large, pointed, rays 18 or 19. Ventral small, with spine and 5 rays.

Shores of south-east Australia.



## Analysis of Species

- <sup>1</sup>  
a. GYMNOBUTIS. Head width  $1 \frac{2}{5}$  to  $1 \frac{2}{3}$  in head; interorbital  $4 \frac{2}{3}$  to  $5 \frac{2}{5}$ ; inner series of teeth enlarged; gill rakers 11 or 12; scales 42 or less in lateral series. grandiceps.
- <sup>2</sup>  
a. PHILYPNODON. Head width  $1 \frac{3}{5}$  to 2 in head; interorbital  $5 \frac{1}{2}$  to  $6 \frac{1}{2}$ ; teeth all subequal; gill rakers 7 to 9; scales 43 or more in lateral series. nudiceps.



Philypnodon grandiceps (Krefft)

Eleotris grandiceps KREFFT, Proc. Zool. Soc. London, p. 183, 1864

(type locality, Upper Hawkesbury River, New South Wales). - GUNTHER, Ann.

Mag. Nat. Hist. London, ser. 3, vol. 20, p. 62, 1867 ( ). -

MACLEAY, Proc. Linn. Soc. New South Wales, vol. 5, 1880, p. 618 (1881)

(Upper Hawkesbury; Easter Creek; Bronte). - *Palmer, Proc. Linn. Soc. New South Wales, vol. 26, p. 1902 (Warwick, Queensland).*

Ophiorrhinus grandiceps OGILBY, Proc. Linn. Soc. New South Wales, vol. 21, pt. 4, p. 746, Nov. 25, 1896 (Liverpool; Camden Park; Richmond River).

Philypnodon grandiceps WAITE, Rec. Austral. Mus., vol. 5, p. 285, pl. 36, fig. 2, 1904. - MC CULLOCH and OGILBY, Rec. Austral. Mus., vol. 12, No. 10, p. 274, July 14, 1919 (reference). - MC CULLOCH, Mem. Austral. Mus.,

No. 5, pt. 3, p. 364, Nov. 28, 1929 (reference). - *Whitley, Mem. Queensland Mus., vol. 10, pt. 1, p. 21, Aug. 28, 1930 (Bellevue Station, 80 mi. up Brisbane R.).*

Eleotris gymnocephalus STEINDACHNER, Sitzs. Ber. Akad. Wiss. Wien, vol. 53, p. 453, pl. 2, fig. 3, 1866 (type locality, Sydney). - GUNTHER, Ann. Mag. Nat. Hist. London, ser. 3, vol. 20, p. 62, 1867.

Gymnobutis gymnocephalus OGILBY, Proc. Linn. Soc. New South Wales, vol. 21, pp. 753, 757, 1897.



Ophiorrhinus angustifrons OGILBY, op. cit., vol. 22, pt. 4, p.

793, June 4, 1898 (type locality, Towree Point, Botany Bay, New South Wales).



Depth  $5\frac{1}{4}$  to  $5\frac{2}{5}$ ; head  $2\frac{3}{4}$ , width  $1\frac{4}{5}$  to 2. Snout  $3\frac{4}{5}$  to 4 in head from snout tip; eye  $4\frac{1}{4}$  to  $5\frac{1}{2}$ , greater than snout in young to  $1\frac{3}{4}$  in snout with age, greater than interorbital in young to  $1\frac{1}{4}$  in interorbital with age; maxillary extends  $\frac{1}{4}$  to  $\frac{3}{5}$  in eye, length  $2\frac{1}{3}$  to  $2\frac{4}{5}$  in head from snout tip; teeth finely villiform, in bands in jaws, narrowing behind and inner row in each slightly larger; tongue subtruncate in front; interorbital 5 to 6, low, depressed concavely. Gill opening extends forward opposite hind edge of pupil. Gill rakers 6 + 12, lanceolate, equal gill filaments, or  $\frac{1}{3}$  in eye.

Scales 33 to 36 in axial lateral series to caudal base and 3 or 4 more on latter; 12 or 13 scales transversely between second dorsal and anal origins; predorsal scaleless, likewise head, chest, breast, prepectoral region and middle of belly. Largest scales on tail. Four short lines transversely of small papillae on each side of snout above, bounded by longitudinal line to fourth line, which continuous across front of interorbital. Five or 6 short transverse lines radiate in interorbital from each upper eye edge, and as many below down on cheek from each lower edge of eyes. Postocular line of papillae back toward suprascapula, with short radiating bars above and below. Above upper front angle of opercle vertical line of papillae extends down on subopercle, and another line inclined back toward upper part of pectoral base. Line along each upper lateral edge of mandibular ramus, giving off 8 bars transversely inward. Line along lower cheek arched upward behind, and another along lower part of preopercular flange semi-parallel, and both giving off transverse bars, that of cheek extending both above and below and that on preopercular flange extended below. Scales with 13 to 24 little radiating basal striae; 35 to 48 apical denticles, largely uniform; circuli rather coarse.



D. VII - I, 9, third spine  $2 \frac{7}{8}$  to  $3 \frac{1}{8}$  in total head, first branched ray  $1 \frac{7}{8}$  to  $2 \frac{1}{5}$ ; A. I, 8, first branched ray  $2 \frac{2}{5}$  to 3; caudal  $1 \frac{1}{2}$  to  $1 \frac{4}{7}$ , rounded least depth of caudal peduncle  $3 \frac{1}{2}$  to 4; pectoral  $1 \frac{2}{5}$  to  $1 \frac{1}{2}$ , rays 17; ventral rays I, 5, fin length  $1 \frac{7}{8}$  to 2 in total head length. Anal papilla small depressed fleshy flap, end obtuse, little shorter than pupil.

Brown, little paler below or on under surfaces. Back mottled with darker and usually 5 darker blotches above on median line. Iris grayish. Dorsals pale brownish, first fin with 3 darker brown longitudinal bands, and second with 4. Caudal dark brown with 7 transverse darker bands. Paired fins brownish.

*Queensland, New South Wales.*



U.S.N.M., no. 48820. Georges River, New South Wales. Dr. J.D.

Ogilby. Length 67 to 85 mm. Four examples.

U.S.N.M., no. 59976. Cook's River, New South Wales. 1905. D.G.

Stead. Length 35 to 80 mm. Ten examples.



Philypnodon nudiceps (Castelnau)

Eleotris nudiceps CASTELNAU, Proc. Zool. Acclim. Soc. Victoria,  
vol. 1, p. 126, July 15, 1872 (type locality, Lower Yarra River, Victoria).-  
SAUVAGE, Bull. Soc. Philom. Paris, ser. 7, vol. 4, p. 53, 1880 (Yarra). -  
MACLEAY, Proc. Linn. Soc. New South Wales, vol. 5, 1881, p. 619 (1881)  
(Yarra). - LUCAS, Proc. Roy. Soc. Victoria, ser. 2, vol. 2, p. 29, 1890 (reference).

Ophiorrhinus nudiceps OGILBY, Proc. Linn. Soc. New South Wales, vol.  
21, pt. 4, p. 748, Nov. 25, 1896 (Yarra).

Philypnodon nudiceps MC CULLOCH and OGILBY, Rec. Austral. Mus., vol.  
12, No. 10, p. 274, July 14, 1919 (reference). - MC CULLOCH, Mem. Austral.  
Mus., No. 5, pt. 3, p. 364, Nov. 28, 1929 (reference).



Depth 7; head  $2 \frac{4}{5}$  to 3, width 2 to  $2 \frac{1}{5}$ . Snout 4 to  $4 \frac{1}{5}$  in head from snout tip; eye 5 to  $6 \frac{1}{2}$ ,  $1 \frac{1}{4}$  to  $1 \frac{3}{4}$  in snout, 1 to  $1 \frac{3}{4}$  in inter-orbital; maxillary reaches opposite hind eye edge to  $\frac{1}{4}$  an eye diameter beyond eye, length  $1 \frac{7}{8}$  to  $2 \frac{1}{5}$  in head from snout tip; teeth simple, conic, villiform, in rather broad bands in jaws with 5 or 6 transversely and narrowing posteriorly; tongue convex in front; interorbital  $3 \frac{2}{3}$  to 5, low, depressed. Gill rakers 4 + 13, slenderly lanceolate, subequal with gill filaments or 3 in eye.

Scales 46 or 47 in axial lateral series to caudal base and 2 more on latter; 12 scales transversely between soft dorsal and anal origins; predorsal region with 13 to 15 scales forward  $\frac{2}{3}$  to eyes.

Head naked. Scales on chest, breast, belly, prepectoral and caudal base much smaller than others, and largest scales on tail. Rows of bead like papillae very indistinct and not made out in this material. Scales with 12 or 13 basal slightly radiating striae; row of 20 + 18 apical denticles, graduated slightly longer each side; circuli fine.

D. VII - I, 10, I third spine  $2 \frac{1}{4}$  to  $2 \frac{3}{4}$  in total head length, first branched ray  $2 \frac{4}{5}$  to  $3 \frac{1}{8}$ ; A. I, 9, I, seventh branched ray  $2 \frac{2}{5}$  to  $2 \frac{2}{3}$ ; caudal  $1 \frac{1}{2}$  to  $1 \frac{2}{3}$ , with median point behind; least depth of caudal peduncle  $3 \frac{2}{5}$  to  $3 \frac{7}{8}$ ; pectoral  $1 \frac{1}{4}$  to  $1 \frac{1}{2}$ , rays 18; ventral rays I, 5, fins well separated, length  $2 \frac{2}{5}$  to  $2 \frac{1}{2}$  in total head length. Anal papilla depressed, scale like, truncate, half of eye.

Largely dull uniform brown, slightly paler on under surfaces. Iris gray. Inside mouth whitish. First dorsal pale, with 2 longitudinal dark brown bands. Second dorsal similarly pale, but with 5 or 6 longitudinal dark brown bands. Caudal pale brown, with 10 narrow transverse dark brown bands. Pectoral brown, with whitish subbasal band. Ventrals brown.

*Victoria, Australia.*



U.S. N.M., no. 48819. Yarra River, Victoria. J.D. Ogilby. Length  
70 to 107 mm. Three examples.



Genus Lindemanella Whitley

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Lindemanella Whitley, Records Austral.  
Mus., vol. 19, no. 4, p. 241, Sep. '9, 1935.  
(Type Lindemanella iota Whitley,  
orthotypic.)

Body compressed, caudal peduncle rather deep. Head somewhat wedge shaped. Snout broad. Eye <sup>large,</sup> intersecting gently convex upper profile of head. Maxillary reaches below center of eye. Mouth large, lower jaw protruded. Teeth villiform, in fairly broad bands, none canines. Tongue large, flat, rounded. Front nostril in tube overhanging upper jaw. Hind nostril simple aperture close to eye. Interorbital broad, flat, naked, with few mucous pores. Gill membranes united across isthmus. Gill rakers slender. Body covered with rather small, imbricate, cycloid scales,



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not on fins; with raised margins and incipient denticulations.

Breast appears naked. No bony crests on top of head. Opercle and cheek scaly above. No lateral line. First dorsal with 6 spines, reduced, much smaller than second dorsal with 9 rays. Anal opposite and like second dorsal. Caudal and pectoral broadly rounded. Ventrals separate, pointed, reach vent, with spine and 5 branched rays.

Minute gobies, fresh water, with ground color dark brown traversed by 2 broad white bands on body, and throat and breast white with black spots. Fins rounded, appear with simple rays. Said to differ from Pogonoleobius in larger eyes, different shape and coloration.



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Lindemanella iota Whitley

Lindemanella iota Whitley, Records  
Austral. Mus., vol. 19, no. 4, p. 242,  
Sep. 19, 1935 (type locality, Lindeman  
Island, North Queensland, in fresh  
water creek).

Depth  $4\frac{1}{5}$ ; head  $2\frac{4}{5}$ . Eye  
greater than interorbital, which  
much broader than snout is long.

Scales 33 in lateral series,  
15 transversely.

D. VI - 9; A. 9; pectoral 15;  
ventral I, 5; caudal with 13  
main rays and several smaller  
ones above and below.

Ground color very dark  
brown, becoming dark gray on  
head and back. Chin, throat  
and breast yellowish, with large  
spaced blackish spots formed by  
large chromatophores. Broad  
whitish band encircles fish at



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interdorsal interval, widened below to include vent and first anal ray. Another white band encircles caudal peduncle, and small saddle-shaped whitish spot immediately below soft dorsal.

Fins whitish, more or less suffused with black pigment, which is particularly intense on parts of dorsal fins.

Length 21 mm.

(Whitley.)

North Queensland.



Calamus taurinus (Jenyns)

(Nāpa thread + Eleotris, with reference to the elongated  
filamentous first dorsal spine.)



Genus Pogoneleotris Bleeker

Pogoneleotris BLEEKER, Arch. Néerl. Sci. Nat. Harlem, vol. 10, pp.

103, 105, 1875. (Type Eleotris heterolepis GÜNTHER, monotypic.)



Head broadly depressed. Upper teeth pluriserial, outer series above and both outer and inner series below little longer, none canines. Scales ctenoid, very small. Muzzle and cheek with numerous cirri. Head finely or minutely scaly. Dorsal with 6 spines and 13 rays. Anal rays 11. Caudal acute.

Known by its fringed head and variable minute scales.



## Analysis of Species

a.<sup>1</sup> D. VI - 13; A. II.

heterolepis.

a.<sup>2</sup> D. VI - I, 8; A. I, 8.

microps.



Pogoneleotris heterolepis (Günther)

Eleotris heterolepis GÜNTHER, Ann. Mag. Nat. Hist. London, ser.  
4, vol. 3, p. 445, 1869 (type locality, Sarawak, Borneo).

Pogoneleotris heterolepis BLEEKER, Verslag. Kon. Akad. Wet.  
Amsterdam, ser. 2, vol. 11, p. 37, 1877 (reference).



Head broad, depressed as in *Batrachus*. Eyes of minute size. Teeth in jaws in band, villiform, above an outer larger series, and larger outer and inner series in lower jaw. No vomerine teeth. Scales ctenoid, numerous small ones mixed with large ones, smaller chiefly occupying base of larger. Snout and cheeks with numerous short filaments and fringes. D. VI - 13, A. 11. None of fin rays produced into filaments. Caudal wedge-shaped, rather produced, shorter than head, upper and lower rudimentary rays numerous, extending for some distance along caudal peduncle. Blackish brown. Length 178 mm. (Günther.)

East Indies.



Pogoneleotris microps Weber

Pogoneleotris microps Weber, Nova Guinea, vol. 5, pt. 2, p. 258,  
pl. 12, figs. 4 a - b, 1908 (type locality, Tawarin River, north New Guinea;  
Merauke River, south New Guinea); vol. 9, pt. 4, p. 598, pl. 14, figs. 14  
a-c, 1913 (Lorentz R.; Varen R.). - FOWLER, Mem. Bishop Mus., vol. 10, p.  
393, 1928 (compiled). - MC CULLOCH, Mem. Austral. Mus., No. 5, pt. 3, p.  
365, Nov. 28, 1929 (reference).



Depth  $3 \frac{3}{5}$ ; head  $3 \frac{1}{3}$ , width  $1 \frac{1}{8}$ . Snout  $4 \frac{2}{5}$  in head from snout tip, length in profile  $\frac{1}{3}$  its width at front of eye; eye  $9\frac{3}{4}$ , 2 in snout, 4 in interorbital; maxillary reaches  $\frac{1}{2}$  in eye, length about 4 in head from snout tip; mouth but little inclined, lower jaw slightly longer; teeth equal, fine, in broad bands, inner row in both jaws somewhat enlarged; interorbital low,  $2 \frac{1}{6}$  in head from snout tip.

Scales 32 to 34 in lateral series; 10 transversely. Most body scales with pair of small auxiliary basal scales above and another pair below. All scales on head small.

D. VI - I, 8, third spine  $2\frac{3}{4}$  in total head length, third branched ray  $2 \frac{1}{8}$ ; A. I, 8, third branched ray  $1 \frac{4}{5}$ ; caudal  $1 \frac{1}{10}$ , convex behind; least depth of caudal peduncle  $2\frac{1}{2}$ ; pectoral  $1 \frac{1}{5}$ , rays 21 or 22; ventral  $1 \frac{1}{3}$ .

Light or dark brown, with obscure darker marbling and indication of longitudinal streaks. First dorsal with yellowish band like blotches. All other fins dark. Second dorsal, anal and caudal with obscured spots, forming cross bands on pectoral. Ventral uniform.

Length 65 to 230 mm. (Weber.)

New Guinea. Appears to differ from the imperfectly described genotype in fewer dorsal and anal rays.



Genus Valenciennia Bleeker

Valenciennia BLEEKER, Nat. Tyds. Ned. Indië, vol. 11, p. 412, 1856.

(Type "Eleotris strigata" BROUSSONET, orthotypic.)

(Valenciennia BOURGUIGNOT, Rev. Mag. Zool., ser. 2, vol. 7, p. 29, 1855, in insects, not involved.)

Calleleotris GILL, Proc. Acad. Nat. Sci. Philadelphia, p. 270, 1863.

(Type Eleotris strigata BROUSSONET, monotypic.)

Valenciennesia BLEEKER, Verslag. Kon. Akad. Wet. Amsterdam, vol. 2, p. 275, 1868. (Type Eleotris strigata BROUSSONET, orthotypic.)

Gobiomorus GILL, Proc. U.S. Nat. Mus., vol. 11, p. 69, 1888. (Type Gobiomorus taiboa LACEPEDE, monotypic.)

Gergobius WHITLEY, Mem. Queensland Mus., vol. 10, p. 22, <sup>H.1, Aug.</sup> 1930. (Type Eleotris taeniura Macleay, orthotypic.)



Body moderately elongate, a little compressed. Head rather large. Jaws subequal. Teeth strong, spaced, uniserial or biserial anteriorly in lower jaw, but uniserial elsewhere; curved canine each side of mandible; palate toothless. Isthmus broad. Scales small, ctenoid. Head naked. Opercles unarmed. Dorsal with 6 spines and 13 to 19 rays. Anal similar to second dorsal. Ventrals separate, with spine and 5 rays.



Valenciennaea longipinnis (Lay and Bennett)

Eleotris longipinnis LAY and BENNETT, Voy. Blossom, Beechey, Zool., p. 64, pl. 20, fig. 3, 1839 (type locality, Loo Choo Islands). -  
 GUNTHER, Cat. Fish. Brit. Mus., vol. 3, p. 105, 1861 (reference in foot note); Journ. Mus. Godeffroy, vol. 6, pt. 11, p. 190, 1877 (Fiji); Rep. Voy. Challenger, vol. 1, pt. 6, p. 35, 1880 (Ovalau, Fiji).

Eleotris (Valenciennesia) longipinnis WEBER, Siboga Exped., vol. 57, Fische, p. 449, 1913 (Sulu Archipelago; Haingsisi).

Valenciennesia longipinnis BLEEKER, Arch. Néerl. Sci. Nat. Harlem, vol. 10, p. 106, 1875 (reference); Verslag. Kon. Akad. Wet. Amsterdam, ser. 2, vol. 11, p. 93, 1877 (Celebes; Solor; Buru; Amboina).

Valenciennaea longipinnis WAITE, Rec. Austral. Mus., vol. 4, p. 271, pl. 43, 1902 ( *Cairns* ). - JORDAN and SEALE, Bull. Bur. Fisher., vol. 25, p. 382, 1905 (1906) (reference). - MC CULLOCH and OGILBY, Rec. Austral. Mus., vol. 12, No. 10, p. 263, July 14, 1919 (type of Eleotris taeniura; - Mc Culloch and Whitley, Mem. Queensland Mus., vol. 8, pt. 2, p. 171, July 7, 1925 (reference). Cairns; Port Curtis, Queensland). ✓ - HERRE, Gobies of Philippines, p. 76, pl. 6, fig. 1, 1927 (Camigao; San Juan). - JORDAN, Journ. Pan-Pac. Res.



Inst., vol. 2, No. 4, p. 10, Oct.-Dec. 1927 (Samoa). - FOWLER, Mem. Bishop Mus., vol. 10, p. 397, 1928 (compiled); vol. 11, No. 5, p. 361, 1931 (reference).

Calleleotris longipinnis MC CULLOCH, Mem. Austral. Mus., No. 5, pt. 3, p. 367, Nov. 28, 1929 (reference). - TOMIYAMA, Jap. Journ. Zool., vol. 7, No. 1, p. 49, 1936 (Unten, Okinawa). - ROXAS and MARTINI, Depart, Agric. Comm. Manila, Tech. Bull. 6, p. 221, 1937 (reference).

Eleotris ikeineur (MONTROUZIER) THIOLLIERE, Faun. Woodlark, p. 188, 1857 (type locality, Woodlark Islands) (name in synonymy).

Eleotris strigata (not VALENCIENNES) THIOLLIERE, Faun. Woodlark, p. 188, 1857 (Woodlark Islands).

Eleotris lineata CASTELNAU, Victor. Offic. Rec. Philadelphia Exhib. (Res. Fish. Austral.), p. 24, 1875 (type locality, Cape York, Queensland). - MACLEAY, Proc. Linn. Soc. New South Wales, vol. 5, p. 623, 1881 (Darnley I.)

Valenciennea lineata MC CULLOCH and OGILBY, Rec. Austral. Mus., vol. 12, No. 10, p. 264, July 14, 1919 (note).

Calleleotris lineata MC CULLOCH, Mem. Austral. Mus., No. 5, pt. 3, p. 367, Nov. 28, 1929 (reference).



Eleotris taeniura MACLEAY, Proc. Linn. Soc. New South Wales,  
vol. 5, pt. 4, p. 624, May 20, 1881 (type locality, Low Islands, Torres  
Strait, Queensland). - OGILBY, Proc. Linn. Soc. New South Wales, vol. 21,  
pt. 4, p. 755, Nov. 25, 1896 (reference).  
*Calteleotris (Gerygobius) taeniura Whitley, Mem. Queensland Mus.,*  
*vol. 10, pt. 1, p. 22, Aug. 28, 1930 (Low Islands).*  
Eleotris nigrifilis OGILBY, op. cit., p. 754 (name proposed to  
replace Eleotris lineata CASTELNAU).

Eleotris muralis (not QUOY and GAIMARD) ISHIKAWA and MATSUURA,  
Prelim. Cat. Fish. Mus. Tokyo, p. 38, 1897 (Miyako-zima, Ryukyu).

Valenciennaea muralis JORDAN and SNYDER, Proc. U.S. Nat. Mus., vol.  
24, p. 42, 1901 (Riukiu; part).



Depth  $4 \frac{4}{5}$  to 5; head  $3 \frac{2}{5}$  to  $3 \frac{3}{5}$ . Snout  $2 \frac{1}{2}$  in head; eye  $5 \frac{5}{6}$  to 6,  $2 \frac{1}{3}$  in snout,  $1 \frac{1}{6}$  in interorbital; maxillary reaches  $\frac{1}{2}$  in eye, length  $2 \frac{1}{4}$  in head; front of mouth begins well below level of eye, lower jaw shorter, included; upper teeth sharp, curved inwardly, lower irregular and small; cheek bulging, large; eye impinging on upper profile; predorsal with well developed, rounded, fleshy nuchal ridge from occiput to first dorsal.

Scales 105 to 110 in lateral series, 40 transversely between second dorsal origin and anal. Head naked, except posterior half of region above opercle. Rest of body covered with finely ctenoid scales, except those on breast and belly which cycloid.

D. VI - I, 12, third spine  $1 \frac{1}{4}$  in head, last membrane joined basally to first spine of second fin, first branched ray  $2 \frac{1}{8}$ ; A. I, 12, first branched ray 3, last branched ray  $1 \frac{3}{4}$ ; caudal 3 in rest of fish, obtusely lanceolate to lanceolate; least depth of caudal peduncle 2 in head; pectoral  $1 \frac{1}{4}$ ; ventral  $1 \frac{2}{3}$ .

In alcohol pale yellowish brown, darker above and paler on lower half. On sides 5 large ocellated ring-like or hasplike brown spots with upper side open and prolonged toward back where fading; first concealed by pectoral, and last just before caudal base. In middle of each ring-like part large brown spot. On back 9 short, transverse, dark brown bars; first above edge between preopercle and opercle, second and widest above hind edge of opercle and pectoral base; remaining 7 equidistant, and last before fifth lateral spot. On sides 4 longitudinal rows of spots. Side of head with 3 pearl white narrow bands with broad dark margins; first ends at upper end of gill opening; lowest begins at mouth angle, like second, extends on pectoral base.

Top of head and snout with scattered dark spots. Entire mouth and



gill cavity lined with purplish black. First dorsal with 7 narrow bands diagonally upward and backward. Second dorsal with 3 rows of ocellated spots. Anal with pearl-colored longitudinal band near base. Caudal with large ocellated spots.

Length 162 to 167 mm.

(Herre.)



Valenciennaea muralis (Valenciennes)

Eleotris muralis (QUOY and GAIMARD) VALENCIENNES, Hist. Nat. Poiss., vol. 12, p. (190) 253, pl. 357, 1837 (type locality, Tukopia, Talboa Group, Santa Cruz Archipelago). - BLEEKER, Nat. Tyds. Ned. Indië, vol. 1, p. 254, 1851 (East Indies); vol. 3, p. (237) 276, 1852 (Wakai, Ceram); Verh. Batavia. Genoot. (Nat. Ichth. Bengal), vol. 25, p. 52, 1853 (reference); Nat. Tyds. Ned. Indië, vol. 4, p. 93, 1853 (Amboina); vol. 7, p. 361, 1854 (Batjan); Act. Soc. Sci. Ind. Neerl., vol. 1, No. 3, p. 5, 1856 (Manado); vol. 1, No. 5, p. 6, 1856 (Amboina). - GÜNTHER, Cat. Fish. Brit. Mus., vol. 3, p. 130, 1861 (Philippines). - JOUAN, Mém. Soc. Nat. Cherbourg, ser. 2, vol. 2, p. 125, 1866 (N.  $8^{\circ} 40'$  lat. E.  $104^{\circ} 15'$  long, Poulo-Condor I. off Lower Cochin). - GÜNTHER, Ann. Mag. Nat. Hist. London, ser. 3, vol. 20, p. 62, 1867 (Cape York). - SCHMELTZ, Cat. Mus. Godeffroy, No. 5, p. 29, 1874 (Viti; Rarotonga). - DAY, Fishes of India, pt. 3, p. 310, pl. 69, fig. 1, 1877. - GÜNTHER, Journ. Mus. Godeffroy, vol. 6, pt. 11, p. 189, 1877 (Fiji; Pelew Islands). - SCHMELTZ, Cat. Mus. Godeffroy, No. 7, p. 47, 1879 (Viti; Cooks Islands). - KLUNZINGER, Sptzs. Ber. Akad. Wiss. Wien, vol. 80, pt. 1, p. 386, 1879 (1880) (Port Darwin). - MACLEAY, Proc. Linn. Soc. New South Wales, vol. 5,



1880, p. 624 (1881) (Cape York, Darnley I., Endeavour R.). - SAUVAGE, Bull. Soc. Philom. Paris, ser. 7, vol. 6, p. 172, 1882 (New Caledonia). - DAY, Fishes of India, Suppl., p. 794, 1888; Fauna of British India, Fishes, vol. 2, p. 290, 1889. - ELERA, Cat. Fauna Filipinas, vol. 1, p. 525, 1895 (Luzon; Cavite; Samar; Borongan). - OGILBY, Proc. Linn. Soc. New South Wales, vol. 21, pt. 4, p. 754, Nov. 25, 1896 (reference). - ISHIKAWA and MATSURA<sup>U</sup>, Prelim, Cat. Fish. Mus. Tokyo, p. 38, 1897 (Riukiu).

Eleotris (Valenciennea) <sup>m</sup>muralis MARTENS, Preuss. Exped. Ost. Asien, vol. 1, p. 392, 1876 (Amboina R. and Larentuka, Flores).

Valenciennea muralis BLEEKER, Nat. Tyds. Ned. Indië, vol. 11, p. 412, 1856 (Boeroe). - JORDAN and SNYDER, Proc. U.S. Nat. Mus., vol. 24, p. 42, 1901 (copied). - JORDAN and RICHARDSON, Philippine Journ. Sci., p. 45, 1910 (reference). - MC CULLOCH and OGILBY, Rec. Austral. Mus., vol. 12, No. 10, p. 261, pl. 37, fig. 4, July 14, 1919 (types of Valenciennea aruensis; Dunk Island; Darnley Island; Torres Strait; Endeavour River; - Mc Culloch and Whitley, Mem. Queensland Mus., vol. 8, pt. 2, p. 170, July 7, 1925 (reference). Aru Islands). ✓ - HERRE, Gobies of Philippines, p. 79, 1927 (Batayan Island; Puerta Princesa; Balabac; Samal; Sitanki). - FOWLER, Mem. Bishop Mus., vol. 10, p. 397, 1928 (Pelew Islands). - WHITLEY, Journ. Pan-Pac. Res. Inst., vol. 3, No. 1, p. 13, Jan.-March, 1928 (Santa Cruz Islands). - FOWLER,



Hong Kong Nat., vol. 2, No. 4, p. 309, Nov. 1931 (Hong Kong); Mem. Bishop Mus., vol. 11, No. 5, p. 361, 1931 (reference). - HERRE, Fishes Herre 1931 Philippine Exped., p. 81, 1934 (Culion; Dumaguete). - Fowler, Mem. Bishop Mus., vol. 11, No. 6, p. 442, 1934 (cotypes of Valenciennes aruensis). - SUVATTI, Index Fish. Siam., p. 151, 1936 (Laem Sing). - FOWLER, Cat. Fish. Malaya, p. 211, 1937 (Singapore).

Eleotriodes muralis BLEEKER, Nat. Tyds. Ned. Indië, vol. 13, p. 385, 1857 (Batjan); p. 388 (Timor koepang); vol. 14, p. 465, 1857 (reference); vol. 15, p. 201. 1858 (Goram); vol. 20, pp. 237, 450, 1859-60 (Singapore); vol. 21, p. 140, 1860 (Banka); Act. Soc. Sci. Ind. Neerl. (Acht. Sumatra), vol. 8, p. 41, Feb. Aug. 1859 (Sumatra); (Celebes) vol. 8, p. 44, 1860 (Celebes); Nat. Tyds. Ned. Indië, vol. 21, p. 138, 1860 (Muntok, Banka); vol. 22, p. 245, 1860 (Batoesendi, Bawean); Verslag. Kon. Akad. Wet. Amsterdam, vol. 12, p. 57, 1861 (Singapore); vol. 14, p. 111, 1862 (Batjan); Ned. Tyds. Dierk., vol. 1, p. 271, 1863 (Timor); vol. 2, p. 192, 1865 (Ceram), p. 293 (Amboina).

Valenciennesia muralis BLEEKER, Arch. Néerl. Sci. Nat. Harlem, vol. 10, p. 106, 1874 (reference); Verslag. Kon. Akad. Wet. Amsterdam, ser. 2, vol. 11, p. 96, 1877 (Sumatra; Singapore; Pulu Brani; Banka; Bawean; Celebes;



Batjan; Ceram; Amboina; Goram; Philippines).

Calleleotris muralis MC CULLOCH, Mem. Austral. Mus., No. 5, pt. 3, p. 367. Nov. 28, 1929 (reference). - ROXAS and MARTINI, Dep. Agric. Comm. Manila, Tech. Bull. 6, p. 222, 1937 (reference).

Eleotris trabeatus RICHARDSON, Icones Piscium, p. 5, pl. 2, 1843 (type locality, Depuch Islands, North west Australia; collection Emery). - GÜNTHER, Cat. Fish. Brit. Mus., vol. 3, p. 105, 1861 (reference in foot note).

Eleotris lineato-oculatus KNER, Sitzs. Ber. Akad. Wiss. Wien, vol. 56, p. 720, pl. 3, fig. 1, 1867 (type locality, Viti Islands). - SCHMELTZ, Cat. Mus. Godeffroy, No. 5, p. 28, 1874 (Viti Islands).

Eleotris lineata (not CASTELNAU) ALLEYNE and MACLEAY, Proc. Linn. Soc. New South Wales, vol. 1, p. 334, 1877.

Valenciennea aruensis OGILBY, Proc. Roy. Soc. Queensland, vol. 23, p. 21, Nov. 7, 1910 (type locality, Aru Islands).

Amblygobius myersi HERRE, Field Mus. Publ. No. 335, ser. 18, No. 12, p. 426, February 15, 1935 (type locality, Hathorn Sound, Solomons); Journ. Pan-Pac. Res. Inst., vol. 6, No. 4, p. 9, Oct.-Dec. 1931 (reference); Field Mus. Publ., vol. 21, No. 353, p. 377, fig. 29, April 15, 1936 (type). - FOWLER, Mem. Bishop Mus., vol. 11, No. 6, p. 444, 1934 (reference).



Depth 5 to 5 1/2; head 3 to 3 1/3, width 1 4/5. Snout 2 1/2 to 2 4/5 in head; eye 4 to 6, 1 1/2 to 2 in snout, greater than interorbital; maxillary reaches front eye edge, or 1/3 in eye, length 2 3/5 in head; upper teeth uniserial, anteriorly slightly larger and slightly curved in jaw; lower teeth biserial, outer series ending in slight antero-lateral canine; tongue with front edge broadly convex, not notched; interorbital 6 1/2 to 8 in head, level. Gill rakers 14-7, lanceolate, 1 1/4 in gill filaments, which 1 4/5 in eye.

Scales 78 to 80-7 to 10 in median lateral series; 30 transversely between soft dorsal and anal origins; head naked and occipital scales not reaching eyes. Scales with 10 or 11 basal radiating striae; apical denticles 7 or 8--7 or 8; circuli fine.

D. VI--I, 12, 1, fourth spine 1 1/5 to 1 4/5 in head, ends in filament, twelfth ray 1 3/5 to 2 2/5; A. I, 12, 1, twelfth ray 1 3/5 to 2 2/5; least depth of caudal peduncle 2 3/4 to 3; pectoral 1 1/4 to 1 1/3; ventral 1 3/4 to 1 3/5; caudal ends in long median point, length 2 7/8 to 3 1/4 in rest of fish.

Light brown or gray brown, slightly paler to whitish on under surface of head and belly. Four longitudinal pale streaks or narrow bands; first begins on nape and reaches last dorsal ray; second starts from snout through eye and



fades below last dorsal rays; third begins above hind edge of maxillary and reaches caudal base; fourth ventral along sides of trunk. Spinous dorsal with 7 horizontal dark edged narrow bands and large black blotch behind end of third spine. Other fins all pale brownish.

India, East Indies, Philippines,  
Cochin China, Rue Kiu, China, North-  
ern Territory of Australia,  
Queensland, Melanesia, Micronesia,  
Polynesia.



Three examples. Batan Island tide pools. June 5, 1909. Length  
22 to 52 mm. [1603.]

Four examples. Canmahala Bay, Ragay Gulf. March 11, 1909. Length  
26 to 36 mm.

22511. Catbalogan, Samar. April 15, 1908. Length 110 mm.

Fifteen examples. Catbalogan. April 16, 1908. Length 99 to 132 mm.

One example. Guijulugan, Negros. April 2, 1908. Length 57 mm.

[827.]

One example. Ragay Bay, Ragay Gulf. March 10, 1909.

One example. Simaluc, Bisibisi Island, tide pool. September 23,  
1909. Length 95 mm.

Three examples. Sirinao Island, reef. December 31, 1908. Length  
67 to 78 mm. [1001.]

Nine examples. Basa Reef tide pool, Gulf of Boni, Celebes, Dutch  
East Indies. December 17, 1909. Length 31 to 76 mm.

Three examples. Danawan and Si Amil Islands, Borneo. September  
27, 1909. Length 63 to 97 mm. [2003.]

Forty-seven examples. Great Tobea Island, tide pools. December 15,  
1909. Length 18 to 98 mm.



U.S.N.M., no. 87952. Benkoelen, Sumatra. December 19, 1925.

Lieut. H.C. Kellers. Length 43 mm. Coloration largely uniform, except jet black blotch little smaller than eye at summit of third and fourth dorsal spines. As Eleotris wardii.



Valenciennea strigata (Broussonet)

Gobius strigatus BROUSSONET, Dec. Ichth., no pagination, 1782 (type locality, Near Tahiti). - BONNATERRE, Ichth., p. 64, pl. 34, fig. 138, 1788 (Pacific Ocean). - GMELIN, Syst. Nat. Linn., vol. 1, p. 1202, 1789 (copied). - WALBAUM, Artedi Pisc., pt. 3, p. 202, 1792 (copied).

Eleotris strigata SCHNEIDER, Syst. Ichth. Bloch, p. 65, 1801 (copied). - VALENCIENNES, Hist. Nat. Poiss., vol. 13, p. 189, 1837 (Tahiti). - BLEEKER, Nat. Tyds. Ned. Indië, vol. 13, p. 57, 1857 (Kajeli, Buru), p. 478 (Karangbollon, Java); Act. Soc. Sci. Ind. Neerl., vol. 1, No. 5, p. (6) 48, 1856 (Amboina); vol. 2, No. 7, p. 6, 1857 (Amboina). - GÜNTHER, Cat. Fish. Brit. Mus., vol. 3, p. 131, 1861 (Amboyna). - SCHMELTZ, Cat. Mus. Godeffroy, No. 4, p. 19, 1869 (Samoa; Viti). - GÜNTHER, Journ. Mus. Godeffroy, vol. 6, pt. 11, p. 190, pl. 111, fig. E, 1877 (Fiji; Samoa; Society Islands). - SCHMELTZ, Cat. Mus. Godeffroy, No. 7, p. 47, 1879 (Samoa; Viti Islands). - KÁROLI, Termesz. Füzetek, Budapest, vol. 1, p. 168, 1881 (1882) (Singapore). - PÖHL, Cat. Mus. Godeffroy, No. 9, p. 33, 1884 (Samoa).

Eleotris (Valenciennesia) strigata WEBER, Siboga Exped., vol. 57, Fische, p. 449, 1913 (Salibabu; Binongka; Nusa Laut; Tuir, Timor).



Eleotriodes strigatus BLEEKER, Nat. Tyds. Ned. Indië, vol. 13, p. 388, 1857 (Timor koepang); Act. Soc. Sci. Ind. Neerl., vol. 3, No. 4, p. 3, 1857-58 (Manado); Verslag. Kon. Akad. Wet. Amsterdam, vol. 12, p. 32, 1861 (Singapore); Ned. Tyds. Dierk., vol. 1, p. 249, 1863 (Flores).

Valenciennaea strigata BLEEKER, Nat. Tyds. Ned. Indië, vol. 11, p. 412, 1856 (Boeroe); Verslag. Kon. Akad. Wet. Amsterdam, ser. 2, vol. 2, p. 284, 1868 (Solor); Verslag. Kon. Akad. Wet. Amsterdam, ser. 2, vol. 11, p. 89, 1877 (Singapore; Java; Celebes; Solor; Flores; Buru; Amboina; Haruko). - MC CULLOCH and OGILBY, Rec. Austral. Mus., vol. 13, No. 10, p. 261, July 14, 1919 (New Hebrides). - FOWLER, Mem. Bishop Mus., vol. 11, No. 6, p. 442, 1934 (New Hebrides). - HERRE, Fishes Herre 1931 Philippine Exped., p. 81, 1934 (Dumaguete). - FOWLER, List / Fishes / Malaya, p. 211, 1937 (Singapore).

Valenciennaea strigatus FOWLER, Mem. Bishop Mus., vol. 10, p. 396, 1928 (Society Islands); vol. 11, No. 5, p. 361, 1931 (reference).

Valenciennesia strigata BLEEKER, Verslag. Kon. Akad. Wet. Amsterdam, ser. 2, vol. 11, p. 89, 1877 (Singapore; Java; Celebes; Solor; Flores; Buru; Amboina; Haruko). - JORDAN and SEALE, Bull. Bur. Fisher., vol. 25, p. 383, 1905 (reference). - EVERMANN and SEALE, Bull. Bur. Fisher., vol. 26,



p. 104, 1906 (Bacon). - JORDAN and RICHARDSON, Philippine Journ. Sci.,

p. 45, 1910 (reference).

Whitley, Records Austral. Mus., vol. 19, no. 4, p. 242, Sep. 19, 1935 (Lindeman, Queensland).  
Calleleotris strigata ROXAS and MARTIN, Dep. Agric. Comm. Manila,

Tech. Bull. 6, p. 220, 1937 (reference).

Gobiomorus taiboa LACEPÈDE, Hist. Nat. Poiss., vol. 2, p. 587, 1800

(type locality, Tahiti) (on BONNATERRE).



Depth  $4 \frac{2}{5}$  to 5; head 3 to 4, width 2 to  $2 \frac{1}{8}$ . Snout 3 in head; eye 4 to  $5 \frac{1}{4}$ ,  $1 \frac{1}{2}$  to  $1 \frac{3}{4}$  in snout,  $1 \frac{1}{3}$  to greater than interorbital; maxillary reaches eye, length  $2 \frac{3}{5}$  in head; teeth conic, well spaced, uniserial in jaws, and each side below little advanced posteriorly directed canine; tongue rounded, entire; interorbital  $4 \frac{1}{8}$ , little convex. Gill rakers 7 short, flexible, feeble points on lower half of first arch,  $\frac{1}{2}$  of gill filaments, which  $1 \frac{1}{3}$  in eye.

Scales  $120+10$  in median lateral series; 40 transversely between soft dorsal and anal origins; 26 predorsal. Head and narrow median predorsal strip naked. Caudal base, chest and breast finely scaled. Scales with 5 to 10 basal radiating striae; apical denticles 16 to 24; circuli very fine.

D. VI, I, 18, 1, spines end in filaments, second  $2 \frac{3}{4}$  in combined head and trunk, third ray  $2 \frac{1}{5}$  in head; A. I, 17, 1, third ray  $2 \frac{1}{8}$ ; caudal  $1 \frac{1}{10}$ , convex behind; least depth of caudal peduncle  $2 \frac{1}{8}$ ; pectoral  $1 \frac{2}{5}$ ; ventral  $1 \frac{1}{2}$ .

Uniform dull brown or olive, under surface of head and belly pale to whitish. Gray or pale bluish line from near end of maxillary, bordered by dark line, extends to upper angle of opercle behind. Sometimes similar smaller line on preopercle and another on subopercle, or behind eye some round spots of same color. Dorsals light brown, crossed by pale reddish longitudinal



lines. Caudal with pale longitudinal band near upper and lower edges.

Malaya, East Indies, Philippines,  
Melanesia, Polynesia.



22527. Dalanganam Island. April 8, 1909. Length 155 mm. [1508.]

22502. Opol, Mindanao. August 4, 1909. Length 145 mm. [1796.]

19305. Pandanon Island. March 24, 1909. Length 96 to 123 mm.

Three examples. [1446.]

17668. Sitanki Reef. September 24, 1909. Length 135 mm.

14301. Teomabal Island. September 18, 1909. Length 161 mm. [1906.]

Six examples. Basa Reef tide pool, Gulf of Boni, Celebes, December 17, 1909. Length 34 to 63 mm. [2169.]

17996. Limbe Strait, Celebes. November 10, 1909. Length 156 mm.

13128. Powatik Harbor, Makyan Island. November 28, 1909. Length 132 mm.

One example. Mahinog, Camiguin Island. August 2, 1909. From torch fisherman. Length 68 mm.

U.S.N.M., no. 55979. Bacon, Luzon. Bureau of Fisheries (3999).  
Length 52 mm.



Valenciennaea sexguttata (Valenciennes)

Eleotris sexguttata VALENCIENNES, Hist. Nat. Poiss., vol. 12, p.

(191) 254, 1837 (type locality, Trinquemale, Ceylon). - BLEEKER, Nat. Tyds. Ned. Indië, vol. 1, p. 253, 1850 (West Sumatra). - JERDON, Madras Journ. Lit. Sci., p. 143, 1851 (Madras). - BLEEKER, Nat. Tyds. Ned. Indië, vol. 3, p. 277, 1852 (Amboina); Act. Soc. Sci. Ind. Neerl., vol. 2, No. 7, p. 6, 1857 (Amboina); vol. 3, No. 9, p. 42, 1857-58 (Padang, Sumatra), p. 5 (Priaman). - GÜNTHER, Cat. Fish. Brit. Mus., vol. 3, p. 130, 1861 (copied). - DAY, Fishes of India, pt. 3, p. 311, 1877; Fauna of British India, Fishes, vol. 2, p. 291, 1889.

Eleotris (Valenciennesia) sexguttata WEBER, Siboga Exped., vol. 57, Fische, p. 750, 1913 (Rotti).

Eleotriodes sexguttata BLEEKER, Nat. Tyds. Ned. Indië, vol. 13, p. 372, 1857 (Sangi); vol. 15, p. 201, 1858 (Goram); Ned. Tyds. Dierk., vol. 2, p. 150, 1865 (Bouro), p. 293 (Amboina).

Eleotriodes sexguttatus BLEEKER, Act. Soc. Sci. Ind. Neerl., vol. 3, No. 9, p. 2, 1857-58 (Padang, Sumatra); Nat. Tyds. Ned. Indië, vol. 18, p. 355, 1859 (Bawean); Act. Soc. Sci. Ind. Neerl. (Acht. Sumatra), vol. 8, p.



41, Feb. Aug. 1859 (Sumatra); (Negende Sumatra) vol. 8, p. 2, 1860 (Benculen, Sumatra); Nat. Tyds. Ned. Indië, vol. 22, p. 65, 1861 (Benculen); Ned. Tyds. Dierk., vol. 1, p. 240, 1863 (Obi); vol. 2, p. 142, 1865 (Buru).

Eleotrides sexguttatus BLEEKER, Nat. Tyds. Ned. Indië, vol. 18, p. 355, 1859 (Bawean); vol. 22, p. 65, 1860 (Benculen).

Valenciennesia sexguttata BLEEKER, Arch. Néerl. Sci. Nat. Harlem, vol. 10, p. 106, 1874 (reference); Verslag, Kon. Akad. Wet. Amsterdam, ser. 2, vol. 7, p. 36, 1873 (Aru Islands); ser. 2, vol. 11, p. 99, 1877 (Sumatra; Bawean; Sangir; Timor; Buru; Obi major; Amboina; Goram).

Valenciennesia sexguttata HERRE, Fishes Herre 1931 Philippine Exped., p. 81, 1934 (Dumaguete).



Depth  $6\frac{3}{4}$  to  $7\frac{1}{3}$ ; head 4 to  $4\frac{3}{5}$ , width 2 to  $2\frac{1}{5}$ . Snout obtusely convex; subequal to little longer than eye; eye  $4\frac{1}{3}$  to  $4\frac{2}{3}$  in head, greater than interorbital; maxillary reaches below front part of eye; jaws equal, upper begins opposite or below level of lower eye edge; teeth pointed, conic, curved, uniserial with 3 to 6 each side canines or canine like in upper jaw; lower teeth biserial in front, uniserial posteriorly, each side externally 5 or 6 canines; interorbital  $\frac{2}{5}$  to  $\frac{2}{3}$  of eye. Pharyngeal teeth multiserial, curved, hooked.

Scales 85 to 90 in lateral series; 22 or 23 transversely between second dorsal and anal. Head and median nuchal region naked, latter with small scales on sides. Scales on body ctenoid, larger on sides and tail.

D. VI - I, 12 or 13, fins partly joined, second to fourth spines sometimes extend beyond membranes and lower than body depth, second dorsal and anal lower than body; A. I, 11 to 13; caudal obtusely convex, shorter to little longer than head; pectoral obtusely rounded, shorter to little longer than head without snout, rays 19 or 20; ventral rays I, 5, little shorter than head without snout.

Body above rose green, below rose pearly. Iris yellowish rose. Jaws, cheek, opercle to pectoral base with 6 to 9 violaceous blue spots forming 2 or 3 longitudinal rows. Middle of predorsal with deep violaceous oblong spot. Sides below with longitudinal rosy band. Fins yellowish golden or rose, membrane pale hyaline. Spinous dorsal spotted sparsely with violet, apex with violet black spot. Second dorsal with 4 to 6 longitudinal violet or rose bands. Anal with submarginal violet band, and basally and terminally posteriorly 8 to 10 golden violet rings more or less united like band. Caudal above and below with rosy ocelli or golden violet rings, lower median in young form oblong violaceous blotch.

Length 64 to 115 mm. (Bleeker.)

East Indies.



Valenciennea violifera Jordan and Seale

Valenciennea violifera JORDAN and SEALE, Bull. Bur. Fisher., vol. 25, p. 383, pl. 52, fig. 2, 1905 (1906) (type locality, Pago Pago, Samoa; Apia; Negros). - JORDAN and RICHARDSON, Philippine Journ. Sci., p. 45, 1910 (copied). - MC CULLOCH and OGILBY, Rec. Austral. Mus., vol. 13, No. 10, p. 261, July 14, 1919 (Samoa; New Hebrides; Bongainville Island; Duke of York Island). - HERRE, Gobies of Philippines, p. 80, 1927 (Negros material examined). - FOWLER, Mem. Bishop Mus., vol. 10, p. 397, 1928 (compiled); vol. 11, No. 6, p. 442, 1934 (Samoa; New Hebrides; Duke of York Island; <sup>U</sup>Bongainville Island; Solomons).

Calleleotris violifera ROXAS and MARTIN, Dep. Agric. Comm. Manila, Tech. Bull. 6, p. 222, 1937 (reference).



Depth 5 to  $5\frac{1}{4}$ ; head 3 to  $3\frac{1}{5}$ , width  $1\frac{4}{5}$ . Snout  $2\frac{4}{5}$  to  $3\frac{1}{4}$  in head; eye  $4\frac{1}{8}$  to  $6\frac{1}{2}$ ;  $1\frac{1}{5}$  to  $2\frac{1}{4}$  in snout, greatly exceeds interorbital in young to subequal with age; maxillary reaches below first fourth of eye, length 2 to  $2\frac{1}{3}$  in head; teeth simple, conic, firm, mostly recurved, biserial in front of lower jaw, upper uniserial, also lower with rather large tooth in middle of each mandibular ramus, hooked back; lips fleshy; tongue with front edge convex; interorbital 6 to  $6\frac{3}{4}$  in head, level. Gill opening not extended forward to preopercle. Gill rakers 5, lanceolate points on ceratobranchial,  $1\frac{1}{2}$  in gill filaments, which  $1\frac{1}{5}$  in eye.

Scales 56 or  $57 + 6$  to 8 in axial lateral series; 24 transversely above anal origin; 18 or 19 predorsal forward (laterally) till over middle of pectoral, not reaching eye. Head, except as noted, naked; scales obsolete or little developed on chest, breast and prepectoral region; caudal base scaly. Scales with 11 or 12 basal radiating striae; row of 26 to 28 apical denticles, strong, conic, slender, graduated larger marginally; circuli fine.

D. VI - I, 12, I or I, 13, I, third spine  $1\frac{1}{6}$  to  $1\frac{7}{8}$  in head, first branched ray  $2\frac{1}{8}$  to  $2\frac{1}{3}$ ; A. I, 12, I, first ray  $2\frac{3}{4}$  to 3; caudal 1 to  $1\frac{1}{5}$ , hind edge convex; least depth of caudal peduncle  $2\frac{2}{7}$  to  $2\frac{4}{5}$ ; pectoral  $1\frac{2}{7}$  to  $1\frac{1}{3}$ , rays 20; ventral rays I, 5, fin  $1\frac{4}{7}$  to  $1\frac{3}{4}$  in head. Anal papilla very small fleshy point.

Pale brownish, lighter to whitish below. Iris gray. About a dozen lilac gray spots on sides of head, all smaller than eye. About 8 slightly darker brown blotches on middle of back below dorsals. Fins pale brown, tip of spinous dorsal black from third and fourth spines. Caudal with dark blotch on upper membranes. Ventral and anal whitish.

East Indies, Philippines, Melanesia, Micronesia, Polynesia. Distinguished chiefly by the jet black spot at the apex of the spinous dorsal.



One example. Cataingan Bay, April 17, 1908. Length 110 mm.

One example. Cebu market. August 28, 1908. Length 95 mm. [1837.]

19563. Galera Bay, Mindoro. June 9, 1908. Length 106 mm.

One example. Nogas Point, Panay, Feb. 4, 1908. Length 44 mm.

One example. [674.] Port Galera, Mindoro. June 9, 1908. Length

92 mm.

6147 [1937.] Tonquil River east of Gumila reef. September 14, 1909 .

Length 76 mm.

13145 [335]. Toumindao Island. February 26, 1908. Length 78 mm.

Seven examples. Basa Reef tide pool, Gulf of Boni, Celebes, Dutch East Indies. December 17, 1909. Length 31 to 97 mm.

U.S.N.M., No. 51771. Apia, Samoa. Length 45 to 117 mm. Type and nine paratypes.

U.S.N.M., no. 52001. Negros. Philippines. Dr. Bashford Dean. Length 68 to 70 mm. Two examples.



Valenciennaea wardii (Playfair)

Eleotris wardii PLAYFAIR, Fishes of Zanzibar, p. 73, pl. 9, fig. 3, 1866 (type locality, Zanzibar).

Calleleotris wardi TOMIYAMA, Jap. Journ. Zool., vol. 7, No. 1, p. 48, fig. 8, 1936 (Okino-sima, Koti).

Eleotris ellioti DAY, Proc. Zool. Soc. London, p. 262, 1888 (type locality, Madras); Fishes of India, Suppl., p. 794, 1888; Fauna of British India, Fishes, vol. 2, p. 290, 1889.

Valenciennaea phaeochalina TANAKA, p. 223, 1917 (type locality, Tanabe, Wakayama).



Depth  $5\frac{1}{2}$ ; head  $3\frac{1}{4}$ ; depth  $1\frac{7}{8}$  its length. Snout  $3\frac{1}{10}$  in head from snout tip; eye 4,  $1\frac{1}{3}$  in snout, close together; maxillary reaches  $\frac{1}{2}$  in eye, length  $2\frac{1}{4}$  in head from snout tip; mouth cleft begins little below level of lower eye edge, lower jaw slightly longer; outer series of teeth slightly enlarged, with small canine at each side of lower jaw; preopercle without spine at angle.

Scales in lateral series about 95. Head naked. Scales apparently largest posteriorly, or on tail.

D. VI - I, 12, third spine  $1\frac{3}{7}$  in total head length, second branched ray 2; A. I, 12, last ray  $1\frac{3}{4}$ ; caudal  $1\frac{1}{8}$ , acutely rounded behind; least depth of peduncle  $2\frac{1}{2}$ ; pectoral  $1\frac{1}{10}$ ; ventral  $1\frac{7}{8}$ .

Body pearly, with 4 broad brown cross bands, anterior and posterior edges of which darker; first below 5 anterior dorsal spines; second corresponds to interdorsal space; third below end of soft dorsal; fourth across caudal. Rudimentary band in interspaces between each pair, first across neck. Straight silvery blue band from lower part of maxillary to upper opercle angle, and faint blue line (disappearing after death) from lower front edge of eye to middle of premaxillary. First dorsal brownish with some white marks and large black white-edged ocellus on summit.



Second dorsal yellowish white, with blackish band along middle and 2 round black spots on base. Anal shaded with yellow, white and pale brown, with dark brown margin.

Length 90 mm.

(Playfair.)

Zanzibar. A handsome species, distinguished chiefly by its coloration.

I also give the account of Eleotris ellioti Day:

Depth  $5\frac{1}{2}$ ; head  $4\frac{1}{2}$ . Snout  $3\frac{1}{2}$  in head; eye  $3\frac{1}{2}$ , subequal with snout; maxillary reaches  $\frac{1}{2}$  in eye; mouth cleft somewhat oblique; teeth rather large, in single row in upper jaw with 2 lateral canines; in 2 or 3 rows in center of lower jaw, separated from single lateral row by 2 large recurved canines; interorbital space narrow.

Scales 80 in lateral series; 16 transversely. Scales ctenoid on hind part of body, where larger than anteriorly on body. Cheek scaleless.

D. VI - 12, spines thin, flexible, equal body depth below, second dorsal and anal similar, height  $1\frac{1}{3}$  lower than first dorsal; A. 13; caudal rounded, central rays somewhat longest; pectoral nearly long as head, rays 21; ventral rays 6.

Whitish, with 5 wide and light chesnut bands descending from back, each with black outer edge; another over nape without dark edges. Dark horizontal band running along cheeks below eye. Dorsals light brown and with white outer edges, first dorsal with large black white-edged blotch on posterior half, and second dorsal with smaller one at fin termination, which latter fin white at base. Caudal brown, with broad yellowish black-bordered vertical band down its center.



Length 81 mm.

(Day.)

India. Known by the large black white bordered ocellus on posterior part of each dorsal fin.



East Indies, Philippines and Japan. This genus was finally merged with Valenciennaea Bleeker by Bleeker in his last work on the eleotrids. It seems sufficiently distinct in its very small scales, striking coloration and the prolonged points of the caudal behind.



Body elongate, compressed. Head moderate. Jaws subequal. Premaxillary teeth uniserial, lower teeth pluriserial with outer row longer and unequal, and each side behind rather long curved canine. Scales 130 in lateral series. Branchiostegals 5. First dorsal with 6 spines, and second dorsal with spine and 11 or 12 rays. Anal with spine and 11 or 12 rays. Two of median caudal rays prolonged in filaments posteriorly.



Genus ELEOTRISODES Bleeker

Eleotriodes BLEEKER, Nat. Tyds. Ned. Indie, vol. 15, p. 212, 1858.

(Type Eleotriodes helsdingenii BLEEKER, monotypic.) (Eleotrioides BLEEKER

1857 not involved.)



Eleotriodes helsdingenii Bleeker

Eleotriodes helsdingenii BLEEKER, Nat. Tyds. Ned. Indie, vol. 15, p. 212, 1858 (type locality, "Goram ins.") - SMITH and POPE, Proc. U.S. Nat. Mus., vol. , p. 489, fig. 9, 1906 (Urado). - JORDAN, TANAKA, SNYDER, Journ. College Sci. Tokyo, vol. 33, art. 1, p. 338, fig. 288, 1913 (reference).

Eleotris helsdingenii GUNTHER<sup>11</sup>, Cat. Fish. Brit. Mus., vol. 3, p. 131, 1861 (copied).

Valenciennesia helsdingenii BLEEKER, Arch. Néerl. Sci. Nat., vol. 10, p. 106, 1875 ( ); Verslag. Kon. Akad. Wet. Ansterdam, ser. 2, vol. 11, p. 91, 1877 (Goram).

Calleleotris helsdingeni TOMIYAMA, Jap. Journ. Zool., vol. 7, No. 1, p. 49, 1936 (reference).



Depth 4 to 5; head  $3 \frac{1}{3}$  to  $3 \frac{2}{5}$ , width  $1 \frac{4}{5}$  to 2. Snout 3 to  $3 \frac{1}{6}$  in head from snout tip; eye  $5 \frac{1}{3}$  to 6,  $1 \frac{4}{5}$  in snout,  $1 \frac{1}{3}$  to  $1 \frac{3}{4}$  in interorbital; maxillary reaches  $\frac{2}{5}$  to  $\frac{1}{2}$  in eye, length  $2 \frac{1}{5}$  to  $2 \frac{1}{4}$  in head; teeth large, conic, simple, sharp pointed, irregularly biserial, at least anteriorly in jaws where little enlarged or canine like, with last antero-lateral below largest; palate toothless; tongue large, thick, convex in front; interorbital  $3 \frac{2}{3}$  to 4, low, nearly level. Gill rakers 0 + 7, lanceolate,  $1 \frac{1}{4}$  in gill filaments which  $1 \frac{1}{5}$  in eye; 2 lowermost gill rakers rudimentary small tubercles.

Scales 120 + 12 in lateral axial series; 36 transversely above anal origin. Head, including predorsal, naked, also chest. Breast and caudal base scaly. Scales with 10 basal radiating striae; 8 rather long, uniserial apical denticles; circuli fine.

Dorsal VI - I, 11, I, spines flexible with third  $1 \frac{7}{8}$  to  $2 \frac{1}{8}$  in head, third ray  $2 \frac{1}{3}$  to  $2 \frac{3}{4}$ ; Anal I, 11, I, third ray  $2 \frac{1}{2}$  to  $2 \frac{7}{8}$ ; caudal  $3 \frac{1}{10}$  to  $3 \frac{1}{4}$  in rest of fish, median rays of each lobe extended in slender point; least depth of caudal peduncle  $2 \frac{1}{2}$  to  $2 \frac{3}{5}$  in head; pectoral  $1 \frac{3}{7}$  to  $1 \frac{1}{2}$ , rays 20; ventral rays I, 5, fin  $1 \frac{4}{7}$  to  $1 \frac{3}{4}$  in head. Anal papilla small, rounded.

Back and upper surfaces pale fawn color, sides and below silvery white. Iris whitish. Dark brown band narrowly around snout end, through eye back above pectoral origin and along back to median upper caudal rays finally ending in caudal extension. Second parallel narrow blackish brown band from middle of maxillary back over cheek to mid-pectoral base down along lower part of tail and finally ending in lower caudal extension. Dorsals pale brownish, first fin with large terminal black blotch over first  $3 \frac{1}{2}$  membranes and broadly ocellated with white. Second dorsal with narrow brown margin next to white submargin. Ventrals and anal more or less cream white.



East Indies, Philippines, Japan. A very handsome distinct marine  
eleotrid, unique in its striped coloration and prolonged caudal points. Rare  
in collections of fishes.

17471. Murcielagos Bay, Mindanao, Philippines. August 9, 1909.

Length 135 mm. [1807.]

U.S.N.M., No. 59562. Urado, Japan. Dr. H.M. Smith. Length 125 mm.



Genus AMBYELEOTRIS Bleeker

Amblyeleotris BLEEKER, Verslag. Kon. Akad. Wet. Amsterdam, ser.  
2, vol. 8, p. 373, 1874. (Type Eleotris periophthalmus Bleeker, mono-  
typic.)



Head compressed, convex, strongly obtuse, deeper than wide. Jaws subequal. Upper outer anterior teeth longer, in 3 or 4 series, lower lateral teeth with median canine. Pharyngeal teeth pluriserial, conic, curved. Nostrils not tubular, anterior remote from snout tip. Preopercle unarmed. Isthmus broad. Branchiostegals 5. Scales 85 in lateral series, anterior small and cycloid, posterior ctenoid.

Head scaleless. First dorsal with 6 spines, second dorsal with spine and 12 or 13 rays. Anal with spine and 12 or 13 rays. Caudal obtuse.



Bleeker distinguishes this genus from Valenciennaea by its greatly obtuse and nearly truncate profile, dentition and anterior scales on the body cycloid. He also says he knows only certainly the type species and that his Valenciennesia notophthalmus may be another. This is so imperfectly known that I only include it here for completeness, evidently based on a Chinese painting.



Valenciennesia notophthalmus Bleeker

Valenciennesia notophthalmus BLEEKER, Ned. Tydschr. Dierk., vol.  
4, 1873, p. 153 (1874) (type locality, China).



Depth  $6 \frac{2}{3}$  in length. Head convex, strongly obtuse. Snout short. Scales small. Dorsal VI - 12?, spines higher than body. Anal 9? Body rosy green above, pearl white below, with 5 broad, transverse violaceous bands. Head with numerous blue dots. Vertical fins pale violaceous. Between first and second dorsal spines black ocellus, center pearly and margin yellow. Dorsal and caudal rays with golden dots. (Bleeker)



Amblyeleotris periophthalmus (Bleeker)

Eleotris periophthalmus BLEEKER, Nat. Tyds. Ned. Indie, vol. 4, p. 477, 1853 (type locality, Batavia, in mari). - GÜNTHER, Cat. Fish. Brit. Mus., vol. 3, p. 124, 1861 (copied). - BLEEKER, Verslag. Kon. Akad. Wet. Amsterdam, ser. 2, vol. 8, p. 374, 1874 ( ). - KAROLI, Termesz. Fuzetek, Budapest, vol. 5, p. 167, 1881, (1882)(Sadong).

Eleotriodes periophthalmus BLEEKER, Nat. Tyds. Ned. Indie, vol. 14, p. 465, 1857.

Amblyeleotris periophthalmus BLEEKER, Verslag. Kon. Akad. Wet. Amsterdam, ser. 2, vol. 11, p. 101, 1877 (Java). - WEBER, Siboga Exped., vol. 57, Fische, p. 450, 1913 (Nusa Laut).



Depth 8, body elongated, anteriorly cylindrical, posteriorly compressed. Head 5, obtuse, width 2 in its depth. Front profile of snout very convex or truncate. Eye 4 in head, more than twice long as snout, orbits smooth, close together. Maxillary reaches below hind eye edge. Jaws subequal. Teeth in bands in jaws, outer row enlarged; single canine each side of lower jaw. Postocular groove conspicuous.

Scales 78 in lateral series. Head naked.

Dorsal VI - I, 12 or 13, lower than body; Anal I, 12 or 13; caudal long as head; pectoral rays 19; ventral rays I, 5.

Body with irregular rosy spots and transverse deep rosy cross bands. Head with golden red ocelli, edged with purple. Dorsale pearly green, edged with golden, spines and rays variegated with brown, and membranes sparingly with pearly ocelli. Caudal golden yellow, below violaceous. Anal with basal half of fin golden yellow marked with small pale blue ocelli; terminal half of fin golden red with 3 longitudinal blue bands. Pectoral yellow basally, variegated with pale rosy. Ventral rays golden, membranes bluish.

Length 75 mm. (Bleeker.)

Java, Sadong, Nusa Laut.



Genus Parioglossus Regan

Parioglossus REGAN, Trans. Linn. Soc. London, ser. 2, vol. 15,  
pt. 2, p. 302, Sep. 1912 (Type Parioglossus taeniatus REGAN, monotypic.)



Head and body strongly compressed. Mouth terminal, protractile, very oblique. Premaxillaries with 6 canines on each side of symphysis, and with lateral teeth smaller, uniserial. Gill opening vertical in front of base of pectoral fin, not produced forward below. Head naked. Body covered with small scales. Two dorsals, first of 6 spines, second of 16 or 17 rays. Anal with feeble spine and 15 rays. Ventrals close together, separate, each with spine and 4 rays.

According to Regan, intermediate between Allogobius Waite 1904, and the other Gobiid genera with only 4 soft rays in the ventral, in the basal length of second dorsal and anal fins. Allogobius has large scales, soft dorsal rays 10, anal rays 8, head only slightly compressed, and mouth very oblique. Ioglossus Bean 1882 is nearer Parioglossus, but seems to differ in the wider gill openings, and dorsal rays 22 to 24. Vireosa Jordan and Snyder 1901 has a mental barbel, and Oxymetopon Bleeker and Orthostomus Kner are distinguished by having at least 30 rays in second dorsal and anal.



Parioglossus taeniatus Regan

Parioglossus taeniatus REGAN, Trans. Linn. Soc. London, ser. 2,  
vol. 15, pt. 2, p. 302, Sep. 1912 (type locality, Pacard Lagoon, Aldabra).



Depth 6; head 5. Snout very short; eye  $2\frac{1}{2}$  in head; mouth nearly vertical, articulation of lower jaw below front eye edge. Dark band from eye to end of caudal fin. Dorsals and upper edge of caudal dusky.

Length 25 to 30 mm. (Regan.)

Regan says large specimen is probably a male, with anal fin dark edged, dorsals higher and with rays more or less produced.



Parioglossus rainfordi Mc Culloch

Parioglossus rainfordi MC CULLOCH, Proc. Linn. Soc. New South

Wales, vol. 46, pt. 4, p. 471, pl. 41, fig. 1, Nov. 30, 1921 (type

locality, Bowen Queensland); Mem. Austral. Mus., No. 5, pt. 3, p. 365,

Nov. 28, 1929 (reference). — Mc Culloch and Whitley, Mem.  
Queensland Mus., vol. 8, pt. 2, p. 170, July 7, 1925  
(reference).



Depth  $5 \frac{1}{5}$ ; head  $4 \frac{1}{2}$ , deeper than broad. Snout  $4 \frac{7}{8}$  in head from snout tip; eye  $3 \frac{1}{2}$ , greatly exceeds snout, equals interorbital; maxillary vertical, extends half way in snout, length  $2 \frac{4}{5}$  in head from snout tip; mouth nearly vertical, begins opposite and level with upper pupil edge; tongue broad, spatulate, rounded in front; upper teeth with row of 7 large outer-graduated larger backward and inside narrow band of minute teeth; mandible with pair of large canines each side, narrow band of minute teeth anteriorly and single row of still smaller ones on each side; no barbels; interorbital convex. Gill opening lateral, vertical, little wider than pectoral base.

Body largely covered with minute, imperfect scales which extend forward to shoulder, leave nape naked, and absent or rudimentary on abdominal surface. No lateral line. Head entirely naked, with several pores above eye and on preopercle edge.

D. V - 17, third spine 4 in fish without caudal, third branched ray  $1 \frac{4}{7}$  in total head length; A. 16, third branched ray  $1 \frac{1}{2}$ ; caudal  $4 \frac{1}{8}$  in rest of fish, convex behind; least depth of caudal peduncle  $1 \frac{3}{4}$  in total head length; pectoral  $1 \frac{3}{7}$ , rays 18; ventral rays I, 4, fin  $4 \frac{1}{8}$  in fish without caudal. Anal papilla minute.

Light green, with dark blue-black marking on caudal base. Violet brown band usually along middle of each side, may be indistinct. Brown spot behind eye, and several pale blue ones on cheek and opercle. First dorsal pink, prolonged rays white. Second dorsal violet basally, then yellow, with broad pink border. Anal bright yellow, bordered with pink. Caudal with 2 broad oblique bars and median rays pink, intermediate color yellow, and upper and lower edges white.

Length 34 to 44. 5 mm. (Mc Culloch.)



Queensland. Said to differ from Pariglossus taeniatus chiefly in the dark color marking on the tail.



Genus Oxymetopon Bleeker

Oxymetopon BLEEKER, Nat. Tyds. Ned. Indië, vol. 22, p. 258, 1860

(1861). (Type Oxymetopon typus BLEEKER, monotypic.)



Body elongate, strongly compressed. Head compressed, with median cutaneous keel above, upper profile convex, concave before eyes. Snout very short. Eye large. Maxillary reaches below eye. Mouth cleft large, very oblique, lower jaw prominent. Teeth in jaws pluriserial, with outer series enlarged, and anteriorly 4 canines, in lower jaw 2 before and 2 behind symphysis. Lower pharyngeals with villiform teeth. Gill openings broad. Branchiostegals 5. Scales on body ctenoid, deciduous, 100 in lateral series. First dorsal with 6 spines, second dorsal with spine and 31 rays, fins subcontinuous, rays more than twice longer than spines; anal with spine and 31 rays, simple like dorsal rays; caudal lanceolate; ventral with spine and 4 rays.

East Indies. Known by the great compression of its body, elevated fronto-nuchal cutaneous ridge, dentition and fin rays.



Oxymetopon typus Bleeker

Oxymetopon typus BLEEKER, Nat. Tyds. Ned. Indië, vol. 22, p.  
(249) 259, 1861 (type locality, Timor). - GUNTHER, Cat. Fish. Brit. Mus.,  
vol. 3, p. 153, 1861. (copied). - BLEEKER, Verslag. Kon. Akad. W<sup>e</sup>t.  
Amsterdam, ser. 2, vol. 11, p. 109, 1877 (Timor).



Depth  $5\frac{1}{4}$ ; head  $9\frac{3}{4}$ , higher than long. Snout very short; eye  $3\frac{1}{4}$ , equals interorbital; maxillary reaches  $\frac{1}{2}$  in eye, length 2 in head; mouth cleft well inclined, lower jaw prominent; inner teeth of jaws small, outer row enlarged, curved, and anteriorly 4 canines, in lower jaw 2 canines before and 2 behind symphysis; median fronto-nuchal cutaneous keel.

Scales 105 in lateral series; ctenoid, conspicuously larger posteriorly. Vertex of head scaled.

D. VI - I, 31, fins continuous basally, spines lower than body, acute, second longest, rays twice in body depth or more than twice longer than spines; A. I, 31, little lower than second dorsal; caudal  $3\frac{1}{4}$  to  $3\frac{1}{3}$  in total length, acutely lanceolate, median rays extended in filament; pectoral rays 20 or 21, obtusely rounded; ventral with spine and 4 rays, shorter than head.

Body rose or greenish rose above, below silvery. Iris yellow. Cheek with 2 longitudinal short blue lines. Dorsals clear rose with 3 or 4 blue longitudinal bands. Anal violaceous. Caudal with golden rose membrane, between each ray small bluish ocelli. Pectoral yellowish rose, fleshy base below with short blue line. Ventrals golden.

Length 159 mm. (Bleeker.)

East Indies.



Genus Nemateleotris Fowler

Nemateleotris FOWLER, Proc. U.S. Nat. Mus., vol. 85, No. 3032, p.  
131, 1938. (Type Nemateleotris magnificus Fowler, orthotypic.)



~~Genus~~ NEMATELEOTRIS ~~new genus~~ Fowler

Body elongate, well compressed. Head small, compressed, greatly shorter than trunk. Snout very short, obtuse. Eye large, greatly exceeds snout or muzzle, well advanced in head, impinging on upper profile of head. Mouth moderate, terminally superior or with mandible little protruded in front. Teeth uniserial, large, simple, well spaced. Maxillary oblique, extends below eye. Interorbital rather broad. Head unarmed, without spines. Gill opening lateral, oblique, rather close before pectoral. Scales present on trunk and tail, very small on predorsal, chest and breast, large on prepectoral and on tail posteriorly. Two dorsals, first of 6 slender spines of which first prolonged as filament which would reach base of last dorsal ray, and soft fin with spine and 28 rays. Anal little shorter than soft dorsal, with spine and 24 rays. Caudal rather large, ends posteriorly in median point (now damaged).

Pectoral short, low. Ventrals well separated, inserted little before pectoral base, slender, moderate.

I frame this genus for an exquisite little eleotrid, with its second and third dorsal spines ending in a prolonged filament; peculiar facies of head with very short snout, large eye and strong jaws, and long soft dorsal and anal; also a color pattern of greatly pleasing and contrasted design.



Nemateleotris magnificus Fowler

Nemateleotris magnificus FOWLER, Proc. U.S. Nat. Mus., vol. 85,  
No. 3032, p. 132, 1938 (type locality, Buka Buka Island, Gulf of Tomini,  
Celebes, Dutch East Indies).



~~Nemateleotris magnificus new species Fowler~~

Depth 5; head  $4\frac{1}{4}$ , width 2. Snout 5 in head from snout tip; eye 3, greatly exceeds snout, equals interorbital; maxillary extends below first third of eye, length  $2\frac{1}{2}$  in head from snout tip; teeth strong, conic, sharp pointed, about 20 in each jaw; interorbital 3, low, depressed concavely. Gill opening restricted, lateral, length  $2\frac{2}{5}$  in head from snout tip, with rather broad isthmus exposed.

Scales 108 + 10 in axial lateral series; 27 transversely above anal origin. Scales very small and crowded on front sides of back, chest, breast and belly. Caudal base scaly, otherwise fins naked. Scales with 11 basal radiating striae; 8 to 12 rather large uniserial apical denticles; circuli fine, obsolete apically.

D. VI - I, 28, i, first spine prolonged filament so as to reach base of last ray, fifth ray  $1\frac{1}{3}$  in total head length; A. I, 24, i, eighth ray  $1\frac{4}{7}$ ; caudal  $3\frac{1}{3}$  in rest of fish, ends posteriorly in median point (damaged); pectoral  $1\frac{1}{10}$  in total head length, rays 17; ventral rays I, 5, fin 1 in total head length; least depth of caudal peduncle  $1\frac{3}{4}$ .

Light brown generally, little paler to whitish on under surface to whitish on under surface of head and belly. Iris gray white. Dorsals and anals largely whitish, long filament grayish. Soft dorsal with broad upper border gray black, little above middle each membrane with large black blotch, convex above and concave below so white of fin forms more or less



of ocellate appearance, also each membrane with basal whitish area with 3 to 6 small dark gray round spots. Anal with lower border gray black and then band made up of black ocellate spot on each membrane. Caudal pale basally, blackish above and below, and oblique black bar converging medially behind on each lobe. Paired fins dull brown.

The diagnosis is contained in the generic account.



U.S.N.M., No. 99044. Buka Island, Gulf of Tomini, Celebes, Dutch  
East Indies. November 20, 1909. [2060.] Length 61 mm. Type.

~~(Magnificus splendid.)~~



Genus Orthostomus Kner

Orthostomus KNER, Sitzs. Ber. Akad. Wiss. Wien, vol. 58, p. 330,

1868. (Type Orthostomus amblyopinus KNER, monotypic.) ~~/~~ Orthostoma

EHRENBERG 1831 and Orthostomum GRUBE 1840 not involved.)

Stomogobius WHITLEY, Austral. Zoologist, vol. 6, p. 344, 1931. (Type

Orthostomus <sup>a</sup> ~~/~~ Amblyopinus KNER, virtually. Stomogobius WHITLEY proposed to

replace Orthostomus Kner.)



Body elongate, compressed. Head obtusely truncate. Snout very short. Mouth well inclined, lower jaw prominent. Teeth in jaws slender, with 4 canines above. Gill openings narrowly separated. Branchiostegals 6. Head scaly above. Body with small ctenoid scales. Dorsal with 6 spines in first fin and spine and 25 rays in second fin. Anal with spine and 28 rays. Ventral with spine and 4 rays. Dorsals partly continuous, rayed fin more than twice longer than spinous fin. Caudal obtusely convex. Paired fins moderate.

Malaya. Bleeker comments on the simple rays of the second dorsal and anal fins, the truncate head somewhat elevated in front, very short vertical mouth, fin formula and rounded caudal as principal characters.



Orthostomus amblyopinus Kner

Orthostomus amblyopinus KNER, Sitzs. Ber. Akad. Wiss. Wien, vol. 68, p. 330, pl. 6, fig. 16, 1868 (type locality, Singapore).- BLEEKER, Verslag. Kon. Akad. Wet. Amsterdam, ser. 2, vol. 11, p. 107, 1877 (reference).- FOWLER, List~~/~~ Fish. Malaya, p. 219, 1938 (reference).



Depth  $4 \frac{3}{5}$ ; head  $4 \frac{3}{5}$ . Snout  $4 \frac{1}{2}$  in head from snout tip; eye  $3 \frac{2}{5}$ , greater than snout; maxillary subvertical, reaches opposite front eye edge, length  $2 \frac{2}{5}$  in head from snout tip; mouth begins level with upper pupil edge, mandible well protruded; interorbital low,  $\frac{1}{2}$  eye.

Scales  $96 + 13$  in lateral series; 27 transversely between second dorsal and anal origins. Head scaleless, except predorsal area and prepectoral region. Scales smaller on anterior part of body and on predorsal extend forward to eyes. Caudal largely scaly from base.

D. VI - 30, and second fin like anal with rays all simple, third spine  $1 \frac{2}{3}$  in total head length, tenth ray  $1 \frac{4}{5}$ ; A. I, 28, fin height 2; caudal  $1 \frac{1}{4}$ , convex behind; least depth of caudal peduncle  $2 \frac{1}{8}$ ; pectoral  $1 \frac{1}{5}$ , rays 18; ventral rays I, 4, fin  $1 \frac{1}{3}$  in total head length.

Back darker than below, with general color light brownish yellow (possibly rose red in life), with silver streaks and spots on side of head. Small silvery spot at front eye edge and 1 or 2 behind eye.

Length 37 mm.

(Kner.)

Malaya. Apparently not obtained since described.



Genus Pteroculiops Fowler

Pteroculiops FOWLER, Proc. U.S. Nat. Mus., vol. 85, No. 3032, p.  
133, 1938. (Type Pteroculiops guttatus Fowler, orthotypic.)



~~Genus~~ Pteroculius ~~new genus~~ Fowler

Body moderately long, well compressed. Head moderate, well compressed, longer than trunk. Muzzle short, broad, declivous. Eye elevated and advanced in head. Mouth rather large, extends well below eye, mandible little protruded. Lips rather broad, fleshy. Tongue rounded in front. Teeth in narrow band above, uniserial below, and each jaw with canines as 2 pairs above and single wide set lower pair. Inter-orbital narrow bony frenum. Gill opening moderate, extends forward about opposite hind preopercle edge. Gill rakers lanceolate, short, few. Scales extend half way in predorsal, when obsolete, head otherwise naked. Scales on body finely ctenoid, very small on trunk, breast and belly and become larger on tail, especially posteriorly. Dorsals two, first of 6 flexible spines, second with spine and 11 rays. Anal with spine and 12 rays. Caudal long as ventral, or both larger than head. Pectoral little shorter.

Distinguished chiefly by its very long ventrals, naked head, and coloration with scattered blue gray round spots, also transverse dark diffuse band across chest and another across middle of belly. It appears allied with Valenciennella in the presence of canines, though with much larger scales (about 54).

~~Therapon~~ fin + Culius



Pteroculiops guttatus Fowler.

Pteroculiops guttatus FOWLER, Proc. U.S. Nat. Mus., vol. 85,

No. 3032, p. 133, 1938 (type locality, Port Banalacan, Marinduque Island).



~~Pteroculius guttatus new species. Fowler~~

Depth 4; head 3, width 2. Snout  $4 \frac{7}{8}$  in head from snout tip; eye 4, greater than snout, greatly exceeds interorbital; maxillary extends  $\frac{3}{4}$  in eye, length  $2 \frac{1}{10}$  in head from snout tip; lips thick and fleshy; teeth strong, canines bent back, lower pair lateral as one on each mandibular ramus medially; interorbital narrow, low, width  $\frac{1}{4}$  of eye. Gill rakers  $5 + 11$ , lanceolate,  $\frac{3}{4}$  of gill filaments or 3 in eye.

Scales  $64 + 5$  in axial lateral series; 19 above anal origin transversely, 19 predorsal forward opposite hind preopercle edge. Head naked. Scales with 9 to 11 basal radiating striae; 11 apical denticles, rather large, uniserial; circuli fine.

D. VI - I, 11, i, fourth spine  $1 \frac{3}{7}$  in total head length, first branched ray 2; A. I, 12, i, first branched ray  $2 \frac{2}{3}$ ; caudal 3 in rest of fish, ends in median point behind; least depth of caudal peduncle  $2 \frac{7}{8}$  in total head length; pectoral  $1 \frac{1}{6}$ , rays 20; ventral rays I, 5, fin 1 in total head length.

Brown, little paler below. Chest, branchiostegal region and isthmus dark chocolate, also a broad chocolate band transversely across middle of postventral region, up each side level with pectoral fin. Iris silvery gray. Head and body with many variable, mostly large rounded blue gray spots, more or less ringed with darker brown. Fins all pale gray brown, anal dark brown terminally, and both soft dorsal and anal with 4 basal blue gray large spots. Pectoral pale yellowish brown. Ventral gray brown outside, gray black inside or toward belly.

Diagnosis included in that of the genus. Only the type known.

U.S.N.M., No. 99045. Port Banalacan. February 23, 1909. [1169.]

Length 69 mm. Type.

~~(Guttatus spotted.)~~



Genus Odonteleotris Gill

Odonteleotris GILL, Proc. Acad. Nat. Sci. Philadelphia, p. 270,

1863. (Type Eleotris macrodon BLEEKER, orthotypic.)

Odontoeleotris WEBER, Nova Guinea, vol. 5, Zool., pp. 256, 257,

1917. (Type Eleotris macrodon BLEEKER.) (Variant spelling of generic name.)



Body moderately elongate. Head moderate. Snout obtuse. Mouth rather large, oblique, mandible protruding in front. No barbels. Narrow band of villiform teeth in each jaw, some inner enlarged ones on sides and several strong canines in front of each jaw. Tongue rounded and free anteriorly. Front nostril in large tube overhanging lip. Gill openings extend little forward below, separated by wide interspace. Gill rakers 7, slender, on first branchial arch. <sup>U</sup>Pseudobranchiae developed. Body covered with small cycloid scales, extend on head before eyes, and cover cheeks and opercles. Cheeks with prominent rows of minute mucigerous papillae. Exposed edge of shoulder girdle smooth, with free dermal membrane. Dorsal fins short, with 6 spines and 11 rays. Anal like soft dorsal, with 9 rays. Caudal rounded. Pectoral without free rays. Ventrals separate, with spine and 5 rays.



Analysis of Species

<sup>1</sup>  
a. Eye less than interorbital; scales small, less than 80 in lateral series.

<sup>1</sup>  
b. Eye  $4\frac{1}{2}$  to 5 in head; scales 80 in lateral series. canina.

<sup>2</sup>  
b. Eye  $7\frac{3}{4}$  in head; scales 120 in lateral series. macrodon.

<sup>2</sup>  
a. Eye greater than interorbital; scales larger, 45 in lateral series. nesolepis.



Odonteleotris canina (Bleeker)

Eleotris canina BLEEKER, Verh. Batavia. Genoot. (Blenn. Gobioid),  
vol. 22, p. 20, 1849 (type locality, Madura Straits near Surabaya and  
Kammal); (Madura), vol. 22, p. 5, 1849 (Kammal); (Midd. Oost-Java), vol.  
23, p. 9, 1850. - GUNTHER, Cat. Fish. Brit. Mus., vol. 3, p. 124, 1861  
(copied).

Odonteleotris canina BLEEKER, Verslag. Kon. Akad. Wet. Amsterdam,  
ser. 2, vol. 11, p. 18, 1877 (Java; Madura).



Depth 6; head 4, width  $1\frac{1}{2}$ . Snout acute; eye  $4\frac{1}{2}$  to 5 in head, subequal or greater than interorbital; maxillary reaches  $\frac{1}{2}$  in eye; mouth begins before middle in depth of eye, protrudes in front; teeth in few series in jaws, acutely curved, spaced in outer series; large curved, erect canine as pair in front above, besides one each side medio-lateral, also medio-lateral each side below; front nostril at snout end, tubular.

Scales 80 in lateral series; 20 transversely between second dorsal and anal fins. Scales on head small.

D. VI - I, 10, first dorsal lower than body depth, second dorsal little higher than first; A. I, 9 subequal with second dorsal; caudal obtusely rounded, subequal with head excluding snout; pectoral rays 15, obtusely rounded, little longer than postocular part of head; ventral not shorter than pectoral, rays I, 5. Anal papilla compressed, oblong quadrate.

Body greenish above, below yellowish. Fins rosy or yellowish. Length 45 to 63 mm. (Bleeker.)

East Indies. Distinguished from Odonteleotris macrodon by its dentition and size of eyes.



Odonteleotris macrodon (Bleeker)

Eleotris macrodon BLEEKER, Verh. Batavia. Genoot. (Nat. Ichth. Bengal), vol. 25, p. (50) 104, 1853 (type locality, Hooghly River, Calcutta); vol. 26, pl. 2, fig. 1, 1857. - GÜNTHER, Cat. Fish. Brit. Mus., vol. 3, p. 129, 1861 (India). - DAY, Fishes of India, pt. 3, p. 311, pl. 65, fig. 5 [not 3 as stated in text] 1877 (lower Bengal; Burma). - KLUNZINGER, Sitzs. Ber. Akad. Wiss. Wien, vol. 80, pt. 1, p. 385, 1879 (1880) (Port Darwin). - MACLEAY, Proc. Linn. Soc. New South Wales, vol. 9, p. 34, 1884 (on Klunzinger). - DAY, Fauna of British India, Fishes, vol. 2, p. 292, 1889.

Odonteleotris macrodon BLEEKER, Arch. Néerl. Sci. Nat. Harlem, vol. 10, p. 104, 1874 (reference). - MC CULLOCH and OGILBY, Rec. Austral. Mus., vol. 12, No. 10, p. 264, July 14, 1919 (Akyab, India). - MC CULLOCH, Austral. Mus. Mem., No. 5, pt. 3, p. 362, Nov. 28, 1929 (reference).



Depth  $5 \frac{2}{3}$ ; head  $3 \frac{3}{5}$ , width  $1 \frac{3}{5}$ . Snout  $4 \frac{1}{2}$  in head from snout tip, little convex in lateral profile; eye  $7 \frac{3}{4}$ ,  $1 \frac{3}{4}$  in snout, 2 in inter-orbital; maxillary reaches  $\frac{1}{2}$  in eye, length  $2 \frac{1}{2}$  in head from snout tip; mouth cleft begins nearly opposite or level with middle of eye, lower jaw longer; "a small barbel is said to exist on each side of upper jaw"; teeth in several villiform rows in both jaws, upper outer row enlarged and with 8 to 10 teeth, of which 2 large canines; lower with 4 to 6 conic canines anteriorly, with inner row also very slightly largest of villiform ones; anterior nostril tubular; upper surface of head flattened, interorbital low; no preopercular spine.

Scales 120 in lateral series; 30 transversely; 70 predorsal. Scales cycloid, extend in irregular rows over body and head, except at front of snout and lower jaw. Posterior half of caudal scaled.

D. VI - I, 9, third spine  $3 \frac{1}{5}$  in total head length, eighth ray 2; A. I, 8, seventh ray  $2 \frac{1}{2}$ ; caudal  $1 \frac{1}{2}$ , convex behind; least depth of caudal peduncle  $2 \frac{3}{4}$ ; pectoral rays 17, fin  $1 \frac{1}{2}$  in total head length; ventral  $1 \frac{3}{4}$ , rays I, 5.

Brownish. Second dorsal with several brown spots. Dark ocellus, edged with light, at upper part of caudal base.

Length 115 mm.

(Day.)

India, Northern Australia. Day's figure is confusing as the line apparently limiting the pectoral base may be mistaken as an extension of the gill opening.



Odonteleotris nesolepis (Weber)

Eleotris (Odontoeleotris) nesolepis WEBER, Nova Guinea, vol. 5, pt. 2, p. 256, 1908 (type locality, Tawarin River and Tinena Brook, north New Guinea).

Odontoeleotris nesolepis FOWLER, Mem. Bishop Mus., vol. 10, p. 389, 1928 (compiled).



Depth 6 to 7; head  $4\frac{1}{2}$ ,  $\frac{1}{3}$  wider than deep. Snout 4 in head; eye 4, subequal with snout,  $\frac{1}{3}$  greater than interorbital; maxillary reaches front eye edge; mouth cleft inclined, lower jaw protruding; teeth fine, in many rows, above and below about 8 more or less canine like; palate toothless; front nostril tubular, at jaw edge; forehead slightly concave.

Scales 45 in lateral series; 16 transversely, 22 predorsal forward to eye. Postocular scales larger than those posterior, or 2 or 3 rows on upper part of opercle, head otherwise naked.

D. VI - 12, first dorsal short, second dorsal  $\frac{2}{3}$  body depth; A. 9 or 10, fin short; caudal rounded; pectoral rays 14, fin pointed; ventral short, long as postocular length.

Upper part of body with 7 or 8 more or less indistinct dark cross bands. Dark band from snout through eye to opercle. Pale under portion of body separated from yellowish brown back by dark longitudinal band. Some of scales of upper side dark edged. Dorsals and upper half of caudal with dark spots or dots, other fins all clear.

Length 30 to 50 mm. (Weber.)

East Indies.



Genus Parviparma Herre

Parviparma HERRE, Gobies of Philippines, p. 81, 1927. (Type

Parviparma straminea HERRE, orthotypic.)



Body elongate, partly cylindrical, little compressed, except posterior fourth, and dorsal and ventral profiles nearly straight and parallel. Head short, broad. Snout short. Eye small, little advanced from middle in head length. Maxillary oblique, reaches below front of eye. Lower jaw large, protrudes in front. Several rows of teeth in each jaw, upper outer row rather large, conic, followed by 4 or 5 rows of minute villiform teeth, and on each side behind median line 2 canines directed back. Lower outer teeth 4, large, coarse, each side of symphysis, and posteriorly 4 rows of minute teeth like those in upper jaw. Interorbital space broad. Scales about 165 in lateral series, 40 transversely. Scales cycloid, more or less embedded and difficult to see. Breast scaly on posterior half. Very small scales on pectoral, caudal, and on head above opercle, rest of head scaleless. Cheeks crisscrossed by lines of minute papillae. Hind preopercle edge marked by large pores, also behind eye and beside each nostril. First dorsal with 6 spines, second dorsal with spine and 10 rays. Anal with spine and 10 rays. Caudal short, rounded. Paired fins short, reach less than half way to anus.



Parviparma straminea Herre

Parviparma straminea HERRE, Gobies of Philippines, p. 82, pl. 6,  
fig. 2, 1927 (type locality, Saug River, a fresh water stream on the southern  
coast of Cotabato Province, Mindanao). - ROXAS and MARTIN<sup>I</sup>, Dep. Agric.  
Comm. Manila, Tech. Bull. 6, p. 223, 1937 (reference).



Depth  $6\frac{1}{2}$ ; head 5, width  $1\frac{4}{9}$ . Snout  $3\frac{1}{4}$  in head; eye  $6\frac{1}{2}$ , 2 in snout,  $2\frac{1}{2}$  in interorbital; maxillary reaches  $\frac{1}{3}$  in eye, very oblique, length  $2\frac{2}{5}$  in head from snout tip; mouth very oblique, with thick heavy jaw and strongly projecting chin giving a bull dog-like appearance; interorbital gently convex.

Scales 165 in lateral series; 38 to 40 transversely.

D. VI - I, 10, third spine  $3\frac{1}{5}$  in total head length, eighth branched ray 2; A. I, 10, eighth  $1\frac{7}{8}$ ; caudal  $1\frac{1}{10}$ ; least depth of caudal peduncle  $1\frac{4}{7}$ ; pectoral  $1\frac{1}{2}$ ; ventral  $1\frac{4}{5}$ . Anal papilla thin, short, triangular.

In alcohol straw yellow, bleaching to nearly white before ventrals, and darker on top of head and back. Two parallel narrow brown bands extend along each side to caudal base, upper beginning little way back of eye, other in pectoral axil. Caudal with semicircular bars of pale and dark brown spots. Other fins uniform pale brownish, like belly.

Length 65 mm.

(Herre.)

Philippines.



Genus Ptereleotris Gill

Ptereleotris GILL, Proc. Acad. Nat. Sci. Philadelphia, vol. 15,  
1863, p. 271. (Type Eleotris microlepis Bleeker, monotypic.)

Encaeura JORDAN and HUBBS, Mem. Carnegis Mus., vol. 10, No. 2, p.  
303, 1925. (Type Encaeura evides JORDAN and HUBBS, orthotypic.)



Body well elongated, compressed. Head small, short. Snout short. Eye high, advanced in head. Mouth moderate, well inclined, lower jaw protruding. No barbels on chin. Teeth in several rows in each jaw, with large, spaced, fang like canines. Palate toothless. Tongue long, partly free. Gill openings wide, isthmus narrow. Gill rakers numerous, long, slender. Pseudobranchiae present. Shoulder girdle smooth. Vertebrae 26. Body covered with minute, cycloid scales, separate anteriorly, irregularly arranged. Head and nape naked. Dorsal with 6 spines and 29 rays. Anal similar to second dorsal, with 27 rays. Caudal emarginate. Pectoral short, rounded, rays about 22. Ventral with spine and 4 rays, longer than pectoral.

Long slender eleotrids, with uniform coloration, minute scales, numerous rays in the soft dorsal and anal and the ventral with only 4 branched rays.



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Ptereleotris evides (Jordan and Hubbs)

Encaeura evides JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10, No. 2, p. 303, pl. 11, fig. 2, 1925 (type locality, Wakanoura, Japan). - HERRE, Journ. Pan-Pac. Res. Inst., vol. 6, No. 4, p. 14, Oct.-Dec, 1931 (New Hebrides). - FOWLER, Mem. Bishop Mus., vol. 11, No. 6, p. 442, 1934 (reference).

Ptereleotris (Encaeura) evides HERRE, Field Mus. Public., No. 353, Zool. ser. vol. 21, p. 340, fig. 16, April 15, 1936 (Turtle Bay, Espiritu Santo Island, New Hebrides).

Ptereleotris microlepis evides TOMIYAMA, Jap. Journ. Zool., vol. 7, No. 1, p. 50, 1936 (Hatizyo-zima; Yusa; Ituman, Okinawa).

Ptereleotris dispersus HERRE, Gobies of Philippines, p. 83, pl. 6, 6, fig. 3, 1927 (type locality, Santo Domingo de Basco, Batan Island, Batanes Province; south coast Cotabato Province, Mindanao). - ROXAS and MARTINI, Depart. Agric. Comm. Manila, Tech. Bull. 6, p. 221, 1937 (reference).

Vireosa sakurai SCHMIDT, Trans. Pac. Comm. Acad. Sci. USSR., vol. 2, p. 113, pl. 6, fig. 2, 1931 (type locality, Ituman, Okinawa).



Depth  $4\frac{1}{4}$  to  $5\frac{1}{2}$ ; head  $3\frac{7}{8}$  to 4, width  $2\frac{1}{8}$  to  $2\frac{1}{3}$ . Snout 4 to  $4\frac{1}{2}$  in head from snout tip; eye  $3\frac{1}{2}$  to  $3\frac{3}{4}$ , greater than snout, equals interorbital; maxillary reaches opposite front of eye, length  $2\frac{2}{5}$  to  $2\frac{2}{3}$  in head from snout tip; teeth above in rather narrow band, inner minute and villiform and outer row enlarged, well spaced and canine like; teeth below uniserial, anterior large curved canines with others graduated smaller posteriorly; interorbital 3 to  $3\frac{1}{5}$  in head from snout tip, low and depressed medially. Gill opening extends forward opposite hind preopercle edge. Gill rakers  $9 + 18$ , lanceolate, subequal with gill filaments or 2 in eye.

Scales  $115 + 10$  in axial lateral series; 30 scales transversely above anal origin, scales forward little more than half way in predorsal, then head naked, except scaly cheek and opercle. Chest, breast, prepectoral region and caudal base scaled. Scales firmly adherent, non-imbricate and cycloid.

D. VI - I, 26, 1, last spine well posterior to fifth and first  $1\frac{1}{10}$  to  $1\frac{1}{8}$  in total head length, third ray  $\frac{1}{4}$  to  $1\frac{1}{2}$ ; A. I, 24, 1, third branched ray  $1\frac{3}{4}$ ; caudal  $3\frac{4}{5}$  to  $4\frac{1}{3}$  in rest of fish, little emarginate behind; least depth of caudal peduncle  $1\frac{7}{8}$  to 2; pectoral  $1\frac{1}{4}$  to  $1\frac{1}{3}$ , rays 20; ventral rays I, 5, fin  $1\frac{1}{4}$  to  $1\frac{1}{2}$  in total head length. Anal papilla small, rounded, convex, long as pupil.

Brown, and light brown on lower surface of head and belly. Iris pale gray. Vertical fins all dark brown, caudal pale to whitish medially and within emargination. Paired fins light brown.

Philippines, Rui Kiu, Japan. Closely related to Ptereleotris microlepis (Bleeker), but without the dark, contrasted or conspicuous transverse bar on the base of the pectoral. Tomiyama also adds that species "has a different markings on vertical fins and 2 or 3 more rays of both dorsal and anal fins".



Two examples. Daleugausn Island. April 8, 1909. Length 105 to 107 mm. [1507.]

8140. Dasol Bay. May 9, 1909. Length 110 mm.

22500. Sabuyan, Mindoro. December 12, 1908. Length 102 mm. [756.]

15616. Silino Island. August 10, 1909. Length 94 mm.

Five examples. Sitanki Reef. September 24, 1909. Length 97 to 105 mm.

Four examples. Usadea Island. March 3, 1908. Length 85 to 102 mm. [391 to 394.]



Ptereleotris heteropterus (Bleeker)

Eleotris heteropterus BLEEKER, Nat. Tyds. Ned. Indië, vol. 9, p.  
(418) 422, 1855 (Bandjermassing, Borneo); vol. 11, p. 103, 1856 (Banda).

Eleotris heteroptera <sup>"</sup>GÜNTHER, Cat. Fish. Brit. Mus., vol. 3, p. 132,  
1861 (copied).

Eleotriodes heteropterus BLEEKER, Nat. Tyds. Ned. Indië, vol. 14, p.  
465, 1867 (reference); Act. Soc. Sci. Ind. Neerl. (Borneo), vol. 8, p. 17,  
1860 (Borneo).

Ptereleotris heteropterus BLEEKER, Verslag. Kon. Akad. Wet. Amsterdam,  
ser. 2, vol. 11, p. 105, 1877 (Borneo).



Depth  $8\frac{1}{2}$ ; head  $5\frac{1}{4}$ , width  $2\frac{1}{3}$ . Snout convex, shorter than eye; eye 3 in head, equals interorbital; maxillary extends below front of eye; mouth begins level with upper front part of eye, oblique; upper jaw protractile, lower jaw protruded; upper teeth acute, conic, curved, pluriserial, in outer series shorter to much longer and 3 or 4 distant canine-like each side; lower teeth triserial to pluriserial, and uniserial posteriorly partly canine like.

Scales over 100 in lateral series. Head and median nuchal line naked. Scales cycloid, minute, on trunk and anteriorly smaller than on tail.

D.  $\overline{\text{VI}}$  -  $\overline{\text{I}}$ , 30 or 31, fins subcontinuous? and subequal, lower than body depth; A.  $\overline{\text{I}}$ , 29 or 30, and anterior rays longer, like those of second dorsal; caudal shorter than head, emarginate, lobes rounded; pectoral rays 23 or 24, obtuse; ventral rays  $\overline{\text{I}}$ , 5, and like pectoral shorter than head without snout. Anal papilla inconspicuous.

Body above greenish rosy, below pearly. Iris rose. Fins pale golden. Median longitudinal part of caudal all black.

Length 49 mm.

(Bleeker.)

Borneo.



Ptereleotris microlepis (Bleeker)

Eleotris microlepis BLEEKER, Nat. Tyds. Ned. Indië, vol. 11, p. (95) 102, 1856 (type locality, Banda); vol. 12, p. 215, 1856 (Nias). - GUNTHER, Cat. Fish. Brit. Mus., vol. 3, p. 132, 1861 (copied). - PLAYFAIR, Fishes of Zanzibar, p. 75, pl. 9, fig. 5, 1865 (Zanzibar). - BLEEKER, Arch. Néerl. Sci. Nat. Harlem, vol. 9, p. 307, 1874.

Eleotriodes microlepis BLEEKER, Nat. Tyds. Ned. Indië, vol. 14, p. 465, 1857 (reference).

Ptereleotris microlepis BLEEKER, Verslag. Kon. Akad. Wet. Amsterdam, ser. 2, vol. 11, p. 103, 1877 (Nias; Banda). - MC CULLOCH and OGILBY,

Rec. Austral. Mus., vol. 12, No. 10, p. 258, pl. 37, fig. 1, July 14, 1919

- Mc Culloch and Whitley, Mem. Queensland Mus., vol. 8, pt. 2, p. 171, July 7, 1925 (reference). (type of Eleotris elongata). ✓ - MC CULLOCH, Mem. Austral. Mus., No. 5, pt.

3, p. 368, Nov. 28, 1929 (reference). - SUVATTI, Index Fish. Siam, p. 150, 1936 (Ko Pipidan).

Eleotris elongata ALLEYNE and MACLEAY, Proc. Linn. Soc. New South Wales, vol. 1, pt. 4, p. 334, pl. 13, fig. 1, March 1877 (type locality, Darnley Island, Queensland).

Ptereleotris playfairi Whitley, Records Austral. Mus., vol. 19, no. 1, p. 90, Aug. 2, 1933 (on Eleotris microlepis Playfair, supposed not of Bleeker).



One example. Bugsuk Island, Balabac. January 5, 1909. Length  
112 mm. [1040.]

Three examples. Catbalogan, Samar. April 16, 1908. Length 105  
to 112 mm. [543.]

Two examples. Cataingan Bay, Dumurug Point, Masbate. April 19,  
1908. Length 92 to 106 mm.

Three examples. Tomahu Island. December 11, 1909. Length 68 to  
75 mm. [2127, 2128.]



Genus Vireosa Jordan and Snyder

Vireosa JORDAN and SNYDER, Proc. U.S. Nat. Mus., vol. 24, p. 38 ,

1901. (Type Vireosa hanae JORDAN and SNYDER, monotypic.)



Body well elongated, slender, compressed. Head small, short. Snout short. Eye rather large, in advance of middle in head. Maxillary reaching eye. Mouth large, subvertical, lower jaw protruded. Some of teeth long, and small canines present. Chin with long flat barbel, followed by 3 smaller ones. Interorbital low. Gill openings wide. Gill rakers long slender. Isthmus narrow. Pseudobranchiae present. Head naked. Body covered with minute, cycloid, separated, and partly embedded scales. Dorsal with 6 spines and 25 rays, spines not produced. Anal like soft dorsal. Caudal with upper and lower rays ending in long filaments. Paired fins moderate, ventrals entirely separate and with spine and 4 rays.

An interesting genus, with mental barbels and caudal filaments outstanding characters.



Vireosa hanae Jordan and Snyder

Vireosa Hanae JORDAN and SNYDER, Proc. U.S. Nat. Mus., vol. 24,  
p. 38, fig. 1, 1901 (type locality, Misaki, Sagami). - JORDAN, TANAKA,  
SNYDER, Journ. College Sci. Tokyo, vol. 33, p. 337, fig. 286, 1913  
(reference). - TOMIYAMA, Jap. Journ. Zool., vol. 7, No. 1, p. 50, 1936  
(Toyama Bay; Misaki; Suzaki; Kagoshima).



Depth  $6\frac{1}{2}$ ; head  $5\frac{1}{3}$ , depth  $1\frac{1}{2}$  its length. Snout 5 in head from snout tip; eye  $3\frac{2}{3}$ , greater than snout, directed laterally, equals interorbital; maxillary reaches about  $1/6$  in eye, length  $2\frac{1}{2}$  in head from snout tip; mouth cleft begins about level with upper eye edge, lower jaw well protruded; upper teeth biserial, outer row consisting of few, large, curved fang-like canines and inner of minute, simple teeth, growing close up to and between canines; side of lower jaw with canines, 2 of which notably large and minute teeth growing between large ones, and posteriorly row of minute teeth; tongue slender, compressed laterally, tip free; median mental barbel long as eye; nostrils without tubes.

Body with minute, cycloid, partly embedded scales, smaller and farther apart anteriorly, larger and more close together posteriorly. Without lens scales appear like shallow depressions in skin. Head naked.

D. VI - 25, spines slender, flexible, second  $1\frac{3}{5}$  in total head, sixth well removed posteriorly, second dorsal height 2; A. 25, origin below fourth or fifth dorsal ray, fin height  $1\frac{4}{5}$ ; caudal long, upper and lower rays ending in long ribbon-like filaments, fin half rest length of fish; caudal peduncle depth  $2\frac{1}{10}$  in total head length; pectoral (damaged)  $1\frac{1}{5}$ ? ventral  $1\frac{1}{8}$ , spine slender.

In life bluish above, becoming green on upper part of head with shade of violet below green. Reddish blotch at pectoral base. Lateral band above anal brick red, extending on caudal where reddish color becomes diffused over fin above and below. Spinous dorsal light blue, tinged pink, violet at base and becomes greenish above; 2 indistinct, narrow blue lines horizontally near upper fin edge. Caudal bluish, tinged with red, filaments greenish. Paired fins with bluish and greenish tints.

Length 94 mm. (Jordan and Snyder.)

Japan.



Genus Laccoeleotris Fowler

Laccoeleotris FOWLER, Proc. Acad. Nat. Sci. Philadelphia, vol. 87,  
Nov. 1, 1935, p. 403. (Type Laccoeleotris lineopinnis FOWLER, ortho-  
typic.)



Body elongate, compressed, slender, coclome but little less than tail measured to caudal base. Head small, compressed. Snout short. Eye large, before middle in length of head. Maxillary oblique, reaches to eye. Interorbital depressed, narrow. Gill openings wide, gill membranes joined with rather narrow isthmus. Branchiostegals 4. Gill rakers short. Pseudobranchiae not evident. Scales very small, cycloid, well separated, appear as if sunk in the skin and not present on the head. No lateral line. Vertical fins lower than body depth. Soft dorsal begins before anal. Caudal rounded. Pectoral broad, short. Ventrals separated, inserted opposite pectoral origin.

Related to Ptereleotris Gill, but that genus with fewer dorsal rays 24 to 36, and fewer anal rays 24 to 32, scales more numerous or 150 to 170 in a longitudinal series, scales forward on predorsal nearly to occiput, and caudal lunate.



Laccoeleotris lineopinnis Fowler

Laccoeleotris lineopinnis FOWLER, Proc. Acad. Nat. Sci.

Philadelphia, vol. 87, Nov. 1, 1935, p. 403, fig. 35 (type locality,

Off Umzumbi in 50 fathoms).



Depth  $6 \frac{4}{5}$ ; head 5, width 3. Snout  $5 \frac{1}{2}$  in head from snout tip; eye 4, greatly exceeds snout or interorbital; maxillary extends below front eye edge, length 3 in head from snout tip; teeth biserial in jaws, outer series with larger or canine-like ones at intervals; no teeth on palate; tongue long; slender, pointed, free; interorbital  $5 \frac{1}{2}$ , low, depressed or slightly concave. Gill rakers  $5 + 15$ , slender, lanceolate, equal gill filaments, which 2 in eye.

Squamous pits about 108 in axial lateral series to caudal base; 20 transversely above anal origin. Pits indistinct or appear as if more or less obliterated on predorsal and about base of spinous dorsal fin. Pits all crowded posteriorly on body so that on caudal basally quite close or segregated.

D. VI - 38, spines flexible, with fifth 2 in total head length, tenth ray  $1 \frac{1}{2}$ ; A. I, 36, flexible spine 4; caudal  $1 \frac{1}{10}$ , slightly emarginate, though ends of each ray extended in short filament; least depth of caudal peduncle  $2 \frac{1}{2}$ ; pectoral 2; ventral  $1 \frac{1}{10}$ , spine flexible, 3 in fin; pectoral rays 23; ventral I, 5.

Mauve, with shades of pale green. Pinkish mauve in area of upper opercle and along back. Snout yellow. Large brown spots on cheeks. Violet spot below eye, which is banded with shades of bright yellow and emerald green. Top and bottom of eye cobalt. Dorsal banded longitudinally with pale blue, tips of rays yellow. Caudal deep yellow at base and lower rays shaded pale mauve. Pectorals brownish. Ventral violet, tips of rays lemon yellow.

Natal, South Africa.



A.N.S.P., No. 63932. From stomach of flat fish (Arnoglossus sp.)  
taken off Umzumbi in 50 fathoms. June 4, 1934. Length 115 mm. Mr. H.W.  
Bell Marley. Type.



Taeneleotris new genus

Type - Taeneleotris hemilepidotus new species.

Body moderately elongate, well compressed, with rather deep caudal peduncle. Head rather small, compressed. Snout short, blunt. Eye large, slightly enters upper profile of head, largely in front half of head. Maxillary oblique, falls below front of eye. Mouth moderate, front or beginning level with middle of eye, lower jaw protruded. Teeth simple, conic, in narrow bands in jaws, with pair of lower front canines. Interorbital moderate, less than eye. Head unarmed. Gill opening lateral, not extended forward. Head and front part of body scaleless, only very fine, small scales on hind part of trunk and tail. Dorsals divided. First dorsal small, of 6 short, flexible spines. Second dorsal with spine and 15 rays. Anal like second dorsal. Caudal truncate. Pectoral rounded, shorter than head. Ventrals small, close together, separated.

An interesting genus, apparently allied with Valenciennesa, Parviparma, and Ptereleotris in the presence of canines. It differs from all markedly in the incomplete lepidosis, and especially the pale coloration with dark brown axial band and another median on back.

~~U.S.N.M., no.                      . Allimango River, Burias Island. March~~  
~~5, 1909. Length 30 mm. Type.~~



Taeneleotris hemilepidotus new  
species



U. S. N. M., no. . Allinango  
River, Burias Island. March 15,  
1909. Length 30 mm. Type.



Genus Oxyeleotris Bleeker

Oxyeleotris BLEEKER, Arch. Néerl. Sci. Nat. Harlem, vol. 9, p. 302,  
1874. (Type Eleotris marmorata BLEEKER, orthotypic.)

Callieleotris FOWLER, Proc. Acad. Nat. Sci. Philadelphia, vol. 86,  
p. 155, 1934. (Type Callieleotris platycephalus FOWLER = Eleotris  
marmorata BLEEKER, orthotypic.) / ~~Callieleotris~~ GILL 1863 not involved.) /

WHITLEY, Rec. Austral. Mus., vol. , No. , p. , 19 . (Type

Callieleotris platycephalus FOWLER, virtually. ↗ WHITLEY proposed to  
replace Callieleotris FOWLER.)



Body elongately ellipsoid, moderately compressed, especially posteriorly. Caudal peduncle rather deep. Head large, depressed, upper profile depressed over eye. Snout broad, depressed, convex in profile depressed over eye. Snout broad, depressed, convex in profile. Eye small, high, advanced before first third in head, with free lids. Mouth rather large, terminally superior. Lips rather narrow, fleshy. Mandible well protruded, broad, shallow. Teeth in jaws in bands, conic, larger and smaller intermixed. Tongue broad, spatulate, edge convex in front. Nostrils small, similar, close together, close before eye. Interorbital low, depressed to level. Gill rakers short, low, broad, rather small. Scales small, crowded and cycloid anteriorly on body, little larger and ctenoid posteriorly. Head, except muzzle and under surfaces largely scaly, scales little larger on opercles. Cheek and infraorbital region with many vertical parallel series of close-set papillae, many radiating from lower eye edge, as short variable bars. Caudal and paired fins finely scaled basally, other fins naked. Two dorsals, spines flexible terminally and rayed fin larger. Anal opposite soft dorsal and smaller. Caudal rather large. Pectoral moderate. Ventral small.

Differs from Eleotris in its different physiognomy and the absence of a preopercular spine. It has much the appearance of Gigantogobius, but with larger scales and different coloration.



## Analysis of Species

a.<sup>1</sup> D. VI - 1, 9 or 10; I, 8 or 9.

b.<sup>1</sup> Scales 85 to 90 in lateral series.

c.<sup>1</sup> Body with rose or orange truncate bands or irregular blotches.  
marmorata.

c.<sup>2</sup> Body without spots or bands; caudal base with black ocellus  
edged with red. urophthalmus.

b.<sup>2</sup> Scales 65 - 70 in lateral series; caudal base with black red  
edged ocellus; body with longitudinal brown lines. urophthalmoides.

a.<sup>2</sup> D. VI - 12; A. 9; scales 56 in lateral series; 10 to 12 dark arched  
cross bars on side. aruensis.



Oxyeleotris marmorata (Bleeker)

- Eleotris marmorata BLEEKER, Nat. Tyds. Ned. Indië, vol. 3, p. 424, (409)  
 1852 (type locality, Bandjermassing, south-east Borneo; Palembang, south-east Sumatra); vol. 5, p. 429, 1853 (Pontianak, Borneo); vol. 9, p. 418, 1855 (Pontianak); Act. Soc. Sci. Ind. Neerl., vol. 3, No. 9, p. 6, 1857-58 (Palembang, Sumatra); Nat. Tyds. Ned. Indië, vol. 16, p. 197, 1858 (Montrado, Borneo); Act. Soc. Sci. Ind. Neerl., vol. 5, No. 6, p. 3, 1858-59 (Palembang); vol. 5, No. 7, p. 3, 1858-59 (Montrado); (Acht. Sumatra), vol. 8, p. 40, Feb.-Aug. 1859 (Sumatra); Nat. Tyds. Ned. Indië, vol. 20, p. 199, 1859-60 (Sintang). - GÜNTHER, Cat. Fish. Brit. Mus., vol. 3, p. 123, 1861 (Siam). - SCHMELTZ, Cat. Mus. Godeffroy, No. 2, p. 8, 1865 (Neva River, Viti Levu). - BLEEKER, Ned. Tyds. Dierk., vol. 2, pp. 34, 174, 1865 (Siam). - SCHMELTZ, Cat. Mus. Godeffroy, No. 4, p. 19, 1869 (Viti Levu). - MARTENS, Preuss. Exped. Ost Asien, vol. 1, p. 392, 1876 (Benculen). - SCHMELTZ, Cat. Mus. Godeffroy, No. 7, p. 47, 1879 (Viti-Levu). - KAROLI, Termesz. Füzetek, Budapest, vol. 5, p. 167, 1881 (1882) (Mutang, Santalong). - SAUVAGE, Bull. Soc. Philom. Paris, ser. 7, vol. , p. 151, 1882-83 (Menam). - POHL, Cat. Mus. Godeffroy, No. 9, p. 33, 1884 (Viti). - MEYER, An. Soc.



Españ. Hist. Nat. Madrid, vol. 14, p. 30, 1885 (N. Celebes; Luzon; Ternate). -

ELERA, Cat. Fauna Filipinas, vol. 1, p. 524, 1895 (Luzon; Rio Pasig;

Manila). - DUNCKER, Naturh. Mus. Hamburg, Mitteil., vol. 21, p. 161, 1903

(1904) (Kuala Semantan).

Eleotris (Oxyeleotris) marmorata WEBER, Siboga Exped., vol. 57,

Fische, p. 448, 1913 (Batu Pangal, Borneo).

Oxyeleotris marmorata BLEEKER, Verslag. Kon. Akad. Wet. Amsterdam,

ser. 2, vol. 11, p. 22, 1877 (Borneo; Sumatra). - HORA, Journ. Nat. Hist.

Soc. Siam, vol. 6, No. 2, p. 179, 1923 (Bangkok; Nontaburi). - HERRE,

Gobies of Philippines, p. 74, 1927 (copied). - FOWLER, Mem. Bishop Mus.,

vol. 10, p. 389, 1928 (compiled); vol. 11, No. 5, p. 360, 1931 (reference);

Proc. Acad. Nat. Sci. Philadelphia, vol. 87, p. 160, 1935 (Bangkok). -

SUVATTI, Index Fish. Siam, p. 151, 1936 (Maenam Cau Phaya; Ayuthaya; Maenam

Lopburi; Thale Noi; Phra Pathom; Pakmampho). - FOWLER, Proc. Acad. Nat. Sci.

Philadelphia, vol. 89, p. 248, 1937 (Bangkok); <sup>List</sup> ~~Cat~~ Fish. Malaya, p. 210,

1938 (Kuala Semantan).

Callieleotris platycephalus FOWLER, Proc. Acad. Nat. Sci. Phila-

delphia, vol. 86, p. 156, figs. 123 to 124, 1934 (type locality, Bangkok,

Siam). - SUVATTI, Index Fish. Siam, p. 150, 1936 (reference).



Depth 4 to  $4 \frac{7}{8}$ ; head  $2 \frac{3}{5}$  to  $2 \frac{3}{4}$ , width  $1 \frac{1}{2}$  to  $1 \frac{3}{5}$ . Snout  $5 \frac{1}{5}$  to  $5 \frac{1}{2}$  in head from snout tip; eye  $7 \frac{3}{5}$  to 9,  $1 \frac{1}{2}$  to  $1 \frac{3}{5}$  in snout,  $2 \frac{1}{4}$  to  $2 \frac{2}{3}$  in interorbital; maxillary extends back obliquely opposite middle of eye, length  $2 \frac{1}{2}$  to  $3 \frac{1}{5}$  in head from snout tip; upper outer enlarged series of conic teeth, more or less uniform and usually single conic large tooth forward at middle of upper jaw, inner band of villiform teeth with 3 or 4 transversely, all around jaws; lower teeth anteriorly like upper, posteriorly each side giving rise to inner enlarged series much same as outer enlarged anterior series; no teeth on tongue or palate; interorbital  $3 \frac{1}{4}$  to 4 in head from snout tip. Gill rakers 4 + 12,  $\frac{2}{5}$  of gill filaments, which  $1 \frac{1}{2}$  times eye.

Scales 72 to 75 in axial lateral series from suprascapula to caudal base; 29 or 30 transversely above anal base, 45 to 50 predorsal forward opposite nostrils. Scales with 12 to 13 basal radiating striae; single row of 38 or 39 apical denticles; circuli fine, only complete basally.

D. VI - I, 9, I, third spine  $2 \frac{7}{8}$  to  $3 \frac{1}{8}$  in total head length; A. I, 8, sixth ray  $2 \frac{2}{5}$  to  $2 \frac{2}{3}$ ; caudal  $1 \frac{1}{6}$  to  $1 \frac{1}{3}$ , convex behind; least depth of caudal peduncle  $2 \frac{1}{2}$  to  $2 \frac{2}{3}$ ; pectoral  $1 \frac{2}{3}$  to  $1 \frac{3}{4}$ , rays I, 18; ventral I, 5, fin  $1 \frac{7}{8}$  to 2 in total head length.

Gray brown to brownish. Along side 5 large blackish more or less irregular blotches, variable, penultimate more or less crescentic and last as large rounded one on caudal base. Dark streak back from eye to upper edge of gill opening. Iris slate, pupil greenish. Under surface of head and abdomen pale to soiled whitish due to dusky mottlings made up of dark or blackish brown dots. Dorsals grayish, variegated with black, as large blotch on spinous fin, more broken blotches on soft fin. Caudal grayish, with 5 blackish crescentic bars posteriorly. Anal grayish, with 6 variable oblique dark bands. Paired fins gray, with transverse dark bands, two dark bars on caudal base.

Malaya, East Indies, Philippines, Siam, Cochin China, Polynesia.



U.S.N.M., No. 28579. Cochin China. Paris Museum. Length 245 mm.

U.S.N.M., No. 35710. Padang Lake, Borneo. W.T. Hornaday. Length  
417 mm.

U.S.N.M., No. 101268. Lake Chin Chin, Jasin, Malacca, 1934. Dr. A.  
Herre. Two examples. Length 68 to 75 mm.

A.N.S.P., No. 60009. Bangkok, Siam. March 11, 1933. R.M. de  
Schauensee. Length 215 mm. Type of Callieleotris platycephalus.

A.N.S.P., No. 60010. Bangkok. March 11, 1933. R.M. de Schauensee.  
Length 192 mm. Paratype of Callieleotris platycephalus.

A.N.S.P., three examples. Bangkok. March 11, 1933. R.M. de Schauensee.  
Length 134 to 183 mm. As Callieleotris platycephalus.



Oxyeleotris urophthalmus (Bleeker)

Eleotris urophthalmus BLEEKER, Nat. Tyds. Ned. Indië, vol. 2, p.

(194) 202, 1851 (type locality, Bandjermassing, Borneo), p. 416 (Sambas);  
vol. 3, p. 409, 1852 (Bandjermassing); vol. 8, p. 152, 1855 (Bandjermassing);  
vol. 9, p. 418, 1855 (Bandjermassing; Pontianak); Act. Soc. Sci. Ind. Neerl.,  
vol. 2, No. 6, p. 3, 1857 (Kahajan, Borneo); - GÜNTHER, Cat. Fish. Brit. Mus.,  
vol. 3, p. 128, 1861 (copied). - BLEEKER, Ned. Tyds. Dierk., vol. 2, pp. 34,  
174, 1865 (Siam). - KÁROLI, Termesz. Füzetek, Budapest, vol. 5, p. 167,  
1881 (1882) (Santabug). - SAUVAGE, Bull. Soc. Philom. Paris, ser. 7, vol.  
p. 151, 1883 (Menam). - WEBER, Nova Guinea, vol. 9, pt. 4, p. 596, 1913  
(Lorentz R.; Sermowai R.).

Oxyeleotris urophthalmus BLEEKER, Verslag. Kon. Akad. Wet. Amsterdam,  
ser. 2, vol. 11, p. 23, 1877 (Borneo; Celebes). - FOWLER, Mem. Bishop Mus.,  
vol. 10, p. 389, 1928 (compiled). - SUVATTI, Index Fish. Siam., p. 151, 1936  
(reference).



Depth 7 to 8; head 4 to  $4\frac{1}{4}$ , width  $1\frac{1}{3}$  to  $1\frac{1}{2}$ . Snout pointed; eye 6 to 7 in head,  $1\frac{3}{4}$  to  $2\frac{3}{4}$  in interorbital; mouth begins level with middle of eye; teeth in jaws pluriserial, small, acute, upper outer series little larger, lower outer front series and inner hind series little enlarged; front nostril in short tube at snout edge; upper profile line little convex on snout and concave above eyes.

Scales 85 to 90 in lateral series; 25 transversely between soft dorsal and anal; 60 predorsal. Scales of head, trunk anteriorly and belly cycloid on middle and side of tail ctenoid. On head scales on preopercle and front of snout and head smallest. Groove above eye and opercle conspicuous. Cheek with few or no grooves.

D. VI - I, 9 or 10, third and fourth spines over twice in body depth, fin obtuse, second dorsal higher anteriorly but less than body depth; A. I, 8 or 9, shorter than second dorsal; caudal obtusely rounded, less or not longer than head without snout; pectoral rays 15 to 17, obtusely rounded, little shorter than head without snout; ventral rays I, 5, not much shorter than pectoral. Anal papilla rudimentary, conic, compressed.

Above brownish green or deep olive, below greenish golden. Iris green, pupil edged golden. Fins violaceous or brown, rays golden. Dorsals and caudal occasionally variegated brownish. Caudal base above with black red edged ocellus. Ventrals edged red below.

Length 70 to 180 mm. (Bleeker.)



Oxyeleotris urophthalmoides (Bleeker)

Eleotris urophthalmoides BLEEKER, Nat. Tyds. Ned. Indië, vol. 4, p. 273, 1853 (type locality, Palembang and Lake Meninju, Sumatra; Sambas, Borneo); vol. 5, p. 428, 1853 (Sambas); vol. 8, p. 152, 1855 (Bandjermassing); vol. 9, p. 418, 1855 (Bandjermassing); Act. Soc. Sci. Ind. Neerl., vol. 2, No. 6, p. 3, 1857 (Kahajan, Borneo); vol. 3, No. 9, p. 6, 1857 - 58 (Palembang, Sumatra); vol. 8 (Acht. Sumatra), p. 41 (Sumatra). - GÜNTHER, Cat. Fish. Brit. Mus., vol. 3, p. 128, 1861 (copied). - KÁROLI, Termesz. Füzetek, Budapest, vol. 5, p. 168, 1881 (1882) (Santabug; Sarawak). - WEBER, Nova Guinea, vol. 9, pt. 4, p. 596, 1913 (Sermowai R., north New Guinea).

Eleotris (Oxyeleotris) urophthalmoides WEBER, Nova Guinea, vol. 5, pt. 2, p. 255, 1908 (Kambo Keper and Tawarin River, north New Guinea; Wagani R., south New Guinea); Siboga Exped., vol. 57, Fische, p. 447, 1913 (Lumbok).

Oxyeleotris urophthalmoides BLEEKER, Verslag. Kon. Akad. Wet. Amsterdam, ser. 2, vol. 11, p. 25, 1877 (Sumatra; Borneo). - FOWLER, Mem. Bishop Mus., vol. 10, p. 389, 1928 (compiled).



Eleotris polyzonatus KLUNZINGER, Verh. Zool. bot. Gesell. Wien,  
vol. 21, p. 482, 1871 (type locality, Red Sea).



Depth  $6\frac{1}{4}$  to 7; head  $3\frac{2}{3}$  to  $4\frac{1}{4}$ , width  $1\frac{1}{2}$  to  $1\frac{3}{4}$ . Snout acute; eye 6 to 7 in head,  $1\frac{1}{2}$  to 2 in interorbital; maxillary extends below eye; mouth begins level before middle of eye; upper teeth pluriserial, small, pointed, outer series little enlarged, subequal with inner larger series; lower teeth on both sides of ramus, especially inner row, enlarged; front nostril in short tube near snout edge.

Scales 65 to 70 in lateral series; 15 transversely between second dorsal and anal; 50 to 55 predorsal forward to snout. Scales on head, nape and belly cycloid, laterally and on tail ctenoid. Cheek with longitudinal groove, crossed by 2 or more transversely.

D. VI - I, 9 or 10, second to fourth spines less than twice lower than body depth, second dorsal higher, rounded or angulate behind; A. I, 8 or 9, lower than second dorsal; caudal not or little longer than postocular part of head, obtusely rounded; pectoral rays 17 or 18, obtusely rounded, base well scaled, not to little shorter than head without snout; ventral rays I, 5, little shorter than pectoral. Anal papilla compressed, oblong, obtuse.

Body reddish or brownish green above, below greenish-golden. Scales on back and sides with darker longitudinal streaks. Iris greenish gold. Fin membranes pale violaceous, rays yellowish golden or rosy, except ventrals. Dorsals and anals variegated with many longitudinal brownish lines, on pectoral and caudal transverse. Anal membrane dotted with pearly. Black or deep brown ocellus on upper caudal base, edged golden or red.

Length 85 to 198 mm. (Bleeker.)

East Indies.



Oxyeleotris aruensis (Weber)

Eleotris (Oxyeleotris) aruensis WEBER, Senckenberg. Naturf.

Gesell. Abhandl., vol. 34, p. 33, pl. 1, fig. 5, 1911 (type locality,

Ngaiguli; Terangan; Kobroor, Aru Islands). - BEAUFORT, Byd. Dierk. Amster-

dam, vol. 19, p. 135, 1913 (Beo and Wai Menil, Waigui).

Oxyeleotris aruensis FOWLER, Mem. Bishop Mus., vol. 10, p. 390,

1928 (compiled).



Depth  $5\frac{1}{2}$ ; head 3 to  $3\frac{1}{5}$ . Snout 4 in head from snout tip; eye  $5\frac{1}{4}$ ,  $1\frac{1}{5}$  in snout, equals interorbital; maxillary reaches  $\frac{1}{3}$  in eye, length 3 in head from snout tip; snout end level with lower edge of eye, mandible little protruded in front; teeth in bands in jaws, enlarged in outer upper and outer lower anteriorly and inner posterior row; front nostril tubular, at lip edge, hind one close before eye, rounded; interorbital low.

Scales 56 in lateral series; 18 transversely; 20 to 25 predorsal forward to eyes. Scales ctenoid. Scales cycloid on head, some small ones extending forward to hind nostril.

D. VI - 12, third spine  $2\frac{4}{5}$  in total head length, first branched ray  $2\frac{1}{2}$ , eleventh  $2\frac{1}{5}$ ; A. 9, eighth ray  $2\frac{2}{3}$ ; caudal  $1\frac{3}{5}$ , convex behind; least depth of caudal peduncle  $2\frac{2}{3}$ ; pectoral  $1\frac{1}{3}$ , rays 14; ventral  $1\frac{3}{4}$  in total head.

In alcohol dark or clear brown, with about 10 arched darker cross bands on trunk and front part of tail. Below and behind eye 2 or 3 dark bars. Dorsals and caudal with several rows of dark spots, latter with paler hind edge and rounded blackish spot at bases of upper rays.

Length 18 to 93 mm. (Weber.)

East Indies.



Oxyeleotris cavifrons (Blyth)

Eleotris cavifrons BLYTH, Journ. Asiatic Soc. Bengal, p. 145,  
1860 (type locality, Sitang River). - DAY, Proc. Zool. Soc. London, p. 517,  
1869 (Andamans); Fishes of India, pt. 3, p. 313, pl. 65, fig. 6, 1877;  
Fauna of British India, Fishes, vol. 2, p. 293, 1889. - BLEEKER, Arch. Néerl.  
Sci. Nat. Harlem, vol. 10, p. 105, 1875 (name only).



Depth  $5\frac{1}{2}$  to  $6\frac{1}{2}$ ; head  $3\frac{1}{2}$  to  $3\frac{3}{4}$ , width  $1\frac{1}{3}$ . Snout  $5\frac{1}{4}$  in head from snout tip, convex in profile; eye 5 to 6, 1 to  $1\frac{1}{2}$  in snout, 1 to  $1\frac{1}{4}$  in interorbital; maxillary reaches  $\frac{3}{4}$  in eye or opposite its hind edge, length  $2\frac{7}{8}$  in head from snout tip; mouth cleft oblique, with snout tip opposite upper eye edge, and lower jaw protruding in front; teeth villiform in both jaws, outer upper row rather enlarged and inner row little larger than outer and directed inwards; 4 or 5 lower front canines, and inner row of teeth enlarged, ending laterally in canine; deep depression over orbits; front nostril somewhat tubular; well marked spine pointing downwards at preopercle angle.

Scales 65 in lateral series; 17 transversely; 55 predorsal forward to snout. Scales cycloid and small anteriorly, ctenoid on body. Scales on opercle and subopercle, none on cheeks which with little rows of warts.

D. VI - I, 8, third spine  $2\frac{1}{3}$  in total head length, first branched ray  $2\frac{7}{8}$ , seventh branched ray  $1\frac{7}{8}$ ; A. I, 8, first branched ray  $3\frac{1}{10}$ , sixth branched ray 2; caudal  $1\frac{1}{2}$ , convex behind; least depth of caudal peduncle  $2\frac{1}{2}$ ; pectoral  $1\frac{2}{5}$ , rays 13; ventral rays I, 5, fin  $1\frac{4}{5}$  in total head length.

Light brown, with dark bands radiating from orbits. Few dark spots on body. Dorsals and caudal barred in spots.

Length 100 mm.

(Day.)

Andaman Islands.



Oxyeleotris lineolatus (Steindachner)

Eleotris lineolatus STEINDACHNER, Sitzs. Ber. Akad. Wiss. Wien, vol. 55, pt. 1, p. 13, 1867 (type locality, Rockhampton, east Australia).- OGILBY, Proc. Linn. Soc. New South Wales, vol. 21, pt. 4, p. 754, Nov. 25, 1896 (reference).

Oxyeleotris lineolatus MC CULLOCH and OGILBY, Rec. Austral. Mus., vol. 13, No. , p. 265, 1919 (types of Eleotris crescens and Eleotris - McCulloch and Whitley, Mem. Queensland Mus., vol. 8, pt. 2, p. 170, July 7, 1925 (reference). immaculatus; Double Creek; Hughenden).✓- FOWLER, Mem. Bishop Mus., vol. 10, p. 390, 1928 (compiled). - MC CULLOCH, Mem. Austral. Mus., No. 5, pt. 3, p. 362, Nov. 28, 1929 (reference). - FOWLER, op. cit., vol. 11, No. 6, p. 441, 1934 (type of Eleotris immaculatus).

Eleotris planiceps (not CASTELNAU 1878) MACLEAY, Proc. Linn. Soc. New South Wales, vol. 7, pt. 1, p. 69, May 23, 1882 (type locality, Palmer River, Queensland).

Eleotris immaculatus MACLEAY, Proc. Linn. Soc. New South Wales, vol. 8, p. 268, 1883 (type locality, Keremma River, Gulf of Papua).

Eleotris immaculata OGILBY, Proc. Linn. Soc. New South Wales, vol.



21, pt. 4, p. 754, Nov. 25, 1896 (reference).

Eleotris selheimi MACLEAY, op. cit., vol. 9, pt. 1, p. 33, May 23, 1884 (type locality, Palmer River, Queensland). (Eleotris selheimi MACLEAY proposed to replace Eleotris planiceps MACLEAY.) - OGILBY, Proc. Linn. Soc. New South Wales, vol. 21, pt. 4, p. 755, Nov. 25, 1896 (reference).

Eleotris crescens DE VIS, Proc. Roy. Soc. Queensland, vol. 2, p. 33, 1885 (June 1886) (type locality, Gracemere and other lagoons, Rockhampton, Queensland).

Eleotris (Oxyeleotris) heterodon WEBER, Nova Guinea, vol. 5, pt. 2, p. 255, pl. 13, fig. 7, 1908 (type locality, Sentani Lake and Moso, North New Guinea).

Eleotris heterodon WEBER, op. cit., vol. 9, pt. 4, p. 596, 1913 (Lake Sentani, Njao, Lorentz River).



Depth  $5 \frac{1}{10}$ ; head  $2 \frac{4}{5}$ , broader than deep. Snout produced, rounded in front, protuberance forms convexity of upper front profile; eye  $9, 1 \frac{9}{10}$  in snout,  $2 \frac{1}{3}$  in interorbital; maxillary reaches  $\frac{3}{4}$  in eye; mouth oblique, lower jaw projecting far beyond upper jaw; tongue broadly spatulate, rounded in front; broad band of upper villiform teeth, some little enlarged near symphysis, and an outer row of strong, small, conical teeth; mandible with bands of villiform teeth, inner row little larger, and outer conic row, posteriorly give place to inner row of similar teeth increasing in size backwards; front nostril in tube, overhangs lip; hind nostril large opening near upper eye edge, with skinny edges; interorbital  $3 \frac{4}{5}$  in head, nearly flat; no preopercular spine.

Scales 60 in lateral series; 20 transversely between second dorsal and anal. Scales ctenoid on body, subequal on sides and tail but smaller on nape, breast and pectoral base. Scales on pectoral and caudal fins between rays. Head except on snout and under surfaces entirely covered with small cycloid scales. Upper surface of head, cheeks, opercles and mandible with numerous minute papillae in rows, largely hidden among scales.

D. VI - 10, rounded first dorsal with second and third spines longest with sixth widely separated, second dorsal with rays higher posteriorly; A. 9, like second dorsal; caudal rounded; pectoral rays 17, not reaching vent; ventral I, 5, reach  $\frac{2}{3}$  to vent. Anal papilla large.

Dark brown, without definite markings. Sometimes lighter or sandy yellow with gray lines along scale rows on back and sides. Dorsal and caudal mottled with gray spots.

Length 181 to 335 mm. (Mc Culloch and Ogilby.)

New Guinea, Queensland.



Oxyeleotris siamensis (G<sup>"</sup>unther)

Eleotris siamensis G<sup>"</sup>UNTHER, Cat. Fish. Brit. Mus., vol. 3, p. 129,  
1861 (type locality, Siam). - BLEEKER, Ned. Tyds. Dierk, vol. 2, p. 174  
(356) 1865 (Siam).

Oxyeleotris siamensis HORA, Journ. Nat. Hist. Soc. Siam, vol. 6, No.  
2, p. 179, 1923 (Nontaburi). - SUVATTI, Index Fish. Siam, p. 151, 1936 (Maenam  
Cau Phaya; Bundu R.; Bangkok; Thomburi; Bangson).



Depth  $4 \frac{1}{3}$  to  $5 \frac{1}{8}$ ; head  $3 \frac{1}{5}$  to  $3 \frac{3}{5}$ , width  $1 \frac{1}{3}$  to  $1 \frac{2}{5}$ . Snout  $3 \frac{3}{5}$  to 4 in head from snout tip; eye  $7 \frac{1}{3}$  to  $8 \frac{1}{2}$ ,  $1 \frac{7}{8}$  to  $2 \frac{1}{4}$  in snout,  $2 \frac{1}{2}$  to  $3 \frac{1}{4}$  in interorbital; maxillary reaches  $\frac{1}{2}$  in eye to opposite hind eye edge, length  $2 \frac{1}{5}$  to  $2 \frac{1}{4}$  in head from snout tip; teeth finely villiform, in broad bands in jaws with outer upper little enlarged, also inner upper row slightly enlarged and depressible; sometimes outer row of lower teeth little enlarged; no teeth on palate; front end of tongue convex; interorbital  $2 \frac{4}{5}$  to  $3 \frac{1}{3}$ , broadly convex. Gill rakers  $1 + 9$ , lanceolate, short,  $1 \frac{1}{2}$  in gill filaments which nearly long as eye.

Scales 73 to  $80 + 8$  to 10 in axial lateral series; 22 or 23 transversely above anal origin; 48 to 52 predorsal forward to upper lip. Head finely scaly, except lips, mandible and branchiostegal region. Cheek with 2 horizontal rows of papillae, crossed in front by 5 rows radiating down vertically from lower eye edge; row along preopercle flange; 2 rows across well into interorbital from upper edge of each eye; row of large pores along face of each mandibular ramus. Scales 30 or 31 basal radiating striae; circuli fine, coarser or obsolete apically.

D. VI - I, 9, I, fourth spine  $3 \frac{2}{5}$  to  $3 \frac{7}{8}$  in total head length, ninth ray  $1 \frac{7}{8}$  to 2; A. I, 8, I, eighth ray 2 to  $2 \frac{2}{5}$ ; caudal  $1 \frac{1}{8}$  to  $1 \frac{1}{4}$ ; least depth of caudal peduncle  $1 \frac{4}{5}$  to  $2 \frac{1}{5}$ ; pectoral  $1 \frac{1}{2}$  to  $1 \frac{3}{4}$ , rays i, 14; ventral rays I, 5, fin  $1 \frac{4}{5}$  to  $2 \frac{1}{8}$  in total head length. Anal papilla short, flattened flap, half length of pupil.

Dark blackish brown, largely uniform. Each scale on body with slightly paler small inconspicuous spot. Iris dark gray. Obscure dark ocellus about size of eye at bases of upper caudal rays.

Siam. My examples do not show "two oblique dark stripes on the cheek, radiating from the eye" as described by Gunther, perhaps due to preservation. The dark caudal ocellus is also quite obscure.



U.S.N.M., No. 103, 361. Menam Chao Phya at Bangkok, Siam. Aug.

11, 1924. Dr. H.M. Smith. Length 171 mm.

U.S.N.M., No. 103, 362. Bandon River, Peninsular Siam. Sep. 23,

1931. Dr. H.M. Smith. Length 202 mm.



Genus Heteroleotris Bleeker

Heteroleotris BLEEKER, Ann. Soc. Sci. Neerl. Harlem, vol. 9, p.  
306, 1874. (Type Gobius diadematus RUPPELL, monotypic.)

Xenisthmus SNYDER, Proc. U.S. Nat. Mus., vol. 35, p. 105, 1908.  
(Type Xenisthmus proriger SNYDER, orthotypic.)

Gignimentum WHITLEY, Rec. Austral. Mus., vol. 19, p. 88, 1933.  
(Type penicillum WHITLEY, orthotypic.)

no. 1,

Aug. 2,

Gignimentum



Body slender, elongate. Head moderate. Snout short. Eye well advanced in head. Mouth reaches below front of eye, lower jaw protruding. Maxillary tip ensheathed. Teeth simple, uniserial in jaws, none on palate. Interorbital low. Scales small, best developed and ctenoid posteriorly on body. Head naked. Vertical fins separated. Dorsals separated, first of 6 short spine, soft rays less than 15. Caudal rounded or elongate. Anal like soft dorsal, opposite. Pectoral long, shorter with age. Ventrals similar, separated though close together.

Jordan and Seale stated "the body translucent and scaleless" though the scales are perfectly distinct and many even be distinguished without the aid of a lens. Snyder (Proc. U.S. Nat. Mus., vol. 35, p. 101, 1908) says its genotype "is not naked, but has the body covered with scales, according to Mr. B.A. Bean, who has kindly reexamined the type."



Heteroeleotris diadematus (Rüppell)

Gobius diadematus <sup>"</sup>RÜPPELL, Atlas Reise Nördl. Afrika, Fische, p. 137, 1828 (type locality, Red Sea); Neue Wirbelth. Fische, p. 138, 1835.

Gobiosoma diadematum <sup>"</sup>GÜNTHER, Cat. Fish. Brit. Mus., vol. 3, p. 85, 1861 (copied). - KLUNZINGER, Verh. Zool.-bot. Gesell. Wien, vol. 21, p. 483, 1871 (Red Sea). - REGAN, Ann. Durban Mus., vol. 2, pt. 4, 200, 1919 (Durban, Natal). - BARNARD, Ann. South African Mus., vol. 21, pt. 2, p. 829, Oct. 1927 (Natal).

Heteroeleotris diadematus FOWLER, Bull. Bishop Mus., No. 38, p. 27, 1927 (Suva Bay); Mem. Bishop Mus., vol. 10, p. 396, 1928 (compiled).

Hypseleotris diadematus FOWLER, Mem. Bishop Mus., vol. 11, No. 6, p. 442, 1934 (Hog Harbor and Santo, New Hebrides).

Heteroeleotris clara JORDAN and SEALE, Bull. Bur. Fisher., vol. 25, p. 392, pl. 36, fig. 2, 1905 (1906) (type locality, Pago Pago, Samoa).

Heteroeleotris phaenna JORDAN and SEALE, op. cit., p. 393, pl. 36, fig. 3 (type locality, Pago Pago).

Heteroeleotris arenarius SNYDER, Proc. U.S. Nat. Mus., vol. 36, p. 100, 1908 (1909) (type locality, Naha, Okinawa, Riu Kiu); vol. 42, p.



513, pl. 67, fig. 3, August 30, 1912 (type). - JORDAN, TANAKA, SNYDER,  
Journ. College Sci. Tokyo, vol. 33, art. 1, p. 339, 1913 (reference).

Xenisthmus proriger SNYDER, Proc. U.S. Nat. Mus., vol. 36, p. 105,  
1908 (1909) (type locality, Naha, Okinawa, Riu Kiu); vol. 42, p. 515,  
pl. 68, fig. 3, 1912 (type). - TOMIYAMA, Jap. Journ. Zool., vol. 7, No. 1,  
p. 49, 1936 (reference).

Gignimentum penicillum WHITLEY, Rec. Austral. Mus., vol. 19, <sup>No. 1,</sup> p. 89,  
fig. 4, <sup>Aug. 2,</sup> 1933 (type locality, New Hebrides, perhaps at Vila Harbour).



Depth 5 to  $6 \frac{1}{3}$ ; head 3 to  $3 \frac{3}{4}$ , width  $1 \frac{1}{2}$  to 2. Snout  $4 \frac{1}{2}$  to 5 in head from snout tip; eye  $4 \frac{1}{4}$  to 5, subequal with snout, little greater than interorbital; maxillary reaches  $\frac{1}{4}$  in eye, length  $2 \frac{7}{8}$  to  $3 \frac{1}{8}$  in head from snout tip; teeth minute, simple, in narrow band in each jaw; interorbital  $5 \frac{1}{2}$  to 6, level. Gill opening extends forward until about first third in postocular space.

Scales 68 + 2 in lateral axial series, obsolete anteriorly and cycloid, posteriorly ctenoid and well distinct; 12 transversely above anal origin. Head, breast, chest, belly and prepectoral region largely naked. Scales show 15 slightly radiating basal striae; row of 30 small, close set, sharp pointed apical denticles; circuli moderate.

D. VI - I, 9, 1 to I, 11, 1, third spine  $2 \frac{1}{3}$  to 3 in total head length, first ray 2 to  $2 \frac{1}{5}$ ; A. I, 10, 1 or I, 9, 1, first ray  $2 \frac{2}{3}$  to 3; caudal 1 to  $1 \frac{1}{4}$ , convex behind; least depth of caudal peduncle  $2 \frac{7}{8}$  to 3; pectoral 1 to  $1 \frac{3}{5}$ , rays 14 or 15; ventral I, 5, fin  $1 \frac{1}{8}$  to  $1 \frac{1}{2}$  in total head length.

Pale brown, with dark though contrasted and ill defined longitudinal band from side of snout over postocular through pectoral base and along lower side of trunk and tail to include lower median rays of caudal. Iris gray. Fins all whitish, except as described for caudal. In small examples dark brown more extensive, including lower side of head, breast, and belly as well.

Red Sea, Natal, Riu Kiu, Polynesia, Micronesia. I have included the above nominal species with this one. Heteroleotris clara and Heteroleotris phaenna are surely synonymous, though the type of the latter is now so discolored as to be uniformly dark brown.



U.S.N.M., No. 51773. Pago Pago, Samoa. Bureau of Fisheries.

Length 26 mm. Type of Heteroeleotris clara.

U.S.N.M., No. 51786. Pago Pago, Samoa. Bureau of Fisheries.

Length 18 mm. Type of Heteroeleotris phaenna.

U.S.N.M., no. 74581. Nafa, Okinawa, Ryukyu Islands, Japan.

Albatross Expedition 1906. Length 9 mm. "Cotype" [= paratype] of  
Heteroeleotris arenarius.

U.S.N.M., no. 74582. Tanegashima Island, Japan. Albatross Expedition  
1906. Length 25 mm. "Cotype" [= paratype] of Heteroeleotris arenarius Snyder.



Heteroleotris marmoratus (Peters)

Gobiosoma marmoratum PETERS, Monatsb. Akad. Wiss. Berlin, p. 267, 1868 (type locality, Samar, Philippines). - JORDAN and RICHARDSON, Philippine Journ. Sci., p. 50, 1910 (reference). - HERRE, Gobies of Philippines, p. 291, 1927 (copied). - ROXAS and MARTIN, Depart. Agric. Comm. Manila, Tech. Bull. 6, p. 228, 1937 (reference).



Depth 5; head 4. Body spindle shaped. Eye scarcely eye diameter from snout tip, near together. Teeth in narrow bands, outer upper row long. D. VI - I, 10. A. I, 9. Brown, marbled darker. Dark spot before caudal base.

Philippines.

(Peters.)



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Heteroeleotris insignis (Herre)

Gobiosoma insignum HERRE, Gobies of Philippines, p. 289, pl.

27 , fig. 3, 1927 (type locality, Dumaguete River, Oriental Negros;  
Bangar; Antique Province).



Depth  $4\frac{1}{2}$ ; head  $3\frac{2}{5}$  to  $3\frac{3}{5}$ , wedge-shaped viewed from above. Snout short, convex, steeply descending,  $3\frac{2}{3}$  to 5 in head from snout tip; eye  $3\frac{2}{3}$  to 5, elevated; mouth terminal, jaws equal; maxillary reaches opposite hind eye edge or nearly eye diameter beyond, length  $2\frac{1}{3}$  in head; upper lip protractile; tongue notched; teeth slender, erect, pointed, 3 rows in each jaw, in outer lower row widely spaced and outer upper row shorter than other two; interorbital narrow, 3 in eye.

No scales.

D. VI - I, 9, third spine  $1\frac{9}{10}$  in head, first branched ray  $1\frac{9}{10}$ ; A. I, 9, first branched ray 2; caudal  $1\frac{1}{4}$ , convex behind; least depth of caudal peduncle  $3\frac{1}{4}$ ; pectoral  $1\frac{1}{8}$ , ends in point behind; ventral  $1\frac{1}{8}$ , rays I, 5. Anal papilla very short, blunt.

In alcohol whitish, with 3 broad, brown, crossbars over back, extend diagonally forward down sides of belly; first under first dorsal, second under second dorsal, and third close behind second dorsal. Wide brown blotch or crossband in front of first dorsal, above pectoral base. Series of brown or black reticulations on lower half of body behind pectoral. Between all these bands body sprinkled with minute brown specks, leaving ground color as series of white spots and dots. Cheek and post-ocular with small dark brown dots. First dorsal marked by 2 brown to black longitudinal bands or 2 or 3 rows of deep brown spots. Second dorsal crossbarred by 4 rows of dark brown spots. Caudal base with white spot surrounded by broad, dark brown band and posteriorly 2 large white spots near upper and lower edges, rest of fin crossbarred by large brown spots. Pectoral crossbarred by 3 or 4 rows of large brown spots. Anal and ventrals colorless.

Length 11 to 44 mm. (Herre.)



Philippines. Distinguished chiefly by its rounded protuberant belly and the coloration with dark cross bands. Perhaps indistinguishable from the imperfectly described Gobiosoma marmoratum.



Heteroteleotris pallidus (Herre)

Gobiosoma pallida HERRE, Fishes Herre 1931 Philippine Exped.,  
p. 91, 1934 (type locality, Sitanki, Sulu Province).



Podeleotris new genus

Type - Podeleotris cinctus new species.

Body elongately ovoid, deepest at spinous dorsal, well compressed, and with moderate caudal peduncle. Head moderate, compressed. Snout short, obtuse. Eye very large, elevated, entering upper profile, mostly in front half of head. Maxillary short, falls below front part of eye. Mouth moderate, oblique, lower jaw protruding in front. Teeth small, in apparently very narrow band in each jaw. Interorbital very narrow. Scales large, about 25 in lateral series. Gill opening extends forward opposite middle of eye. Head largely scaled and predorsal scales extending forward to eye. Dorsal spines 5, second to fourth end in free flexible filaments, shorter than head. Second dorsal with spine and 7 rays, posterior longest. Anal with spine and 6 rays. Caudal small, apparently rounded. Pectoral subequal with head, base broad. Ventrals entirely separated, basal interspace less than basal width of either fin, fin reaching back beyond front of anal, also longer than pectoral or head. Coloration ornate, with a dozen or over transverse brown bands, which extend on vertical fins.

Related to Eviota Jenkins, differing in all the rays of the paired fins entire and not fringed, the elongate ventrals reaching over the front of the anal and its cross barred coloration.

(Ποῦς foot - ventral fin + Eleotris.)



Podeleotris cinctus new species



U.S.N.M., No. Biri Channel. June 1, 1909. Secured with dynamite.  
Length 20 mm. Type.



Genus Henicichthys Tanaka

Henicichthys TANAKA, Tokyo Zool. Mag., vol. 27, p. 568, 1915.

(Type Henicichthys foraminosus TANAKA, monotypic.)



Body elongate, compressed, slightly tapering back to rather deep caudal peduncle. Head large. Snout short. Eye moderate, well advanced in first half of head. Mouth large. Maxillary extends beyond eye, end exposed posteriorly. Jaws and vomer with simple teeth. Gill membranes free from isthmus. No scales. First dorsal small, lower than longer and higher soft dorsal, latter with rays longest posteriorly. Anal opposite and similar to soft dorsal, smaller. Caudal large. Pectoral moderate. Ventrals small, close together inserted little before pectoral.

Distinguished chiefly by its naked head, body and fins. Especially the head, less so the body, with an elaborate system of mucous pores.



Henicichthys foraminosus Tanaka

Henicichthys foraminosus TANAKA, Tokyo Zool. Mag., vol. 27, p.

568 , 1915 (type locality, Nagasaki). - TOMIYAMA, Jap. Journ. Zool., vol.

7, No. 1, p. 50, fig. 9, 1936 (Nagasaki; Osima; Yokkaiti; Kominato).



Depth 4 to 5; head  $2 \frac{3}{5}$  to  $2 \frac{3}{4}$ , compressed. Snout  $3 \frac{1}{2}$  to 4 in head; eye 5, subequal with snout in profile; maxillary extends  $\frac{1}{2}$  on eye diameter beyond eye, posterior expansion  $1 \frac{1}{2}$  in eye, length  $1 \frac{9}{10}$  in head from snout tip; tongue very narrow; upper teeth uniserial in jaws, with several anterior ones enlarged; lower teeth in few rows, 3 or 4 median laterals and few near front tip of mandible enlarged; vomer with few strong teeth; interorbital  $3 \frac{1}{2}$  to  $4 \frac{1}{2}$  in head; gill opening extends forward to below eye.

Many series of mucous pores on head and body.

D. VI - I, 10, third spine about  $3 \frac{1}{5}$  in total head length, seventh branched ray 2; A. II, 9, seventh ray  $2 \frac{1}{5}$ ; caudal  $1 \frac{2}{3}$ , slightly notched behind medially; least depth of caudal peduncle 3; pectoral  $1 \frac{1}{2}$ , rays 11; ventral rays I, 5, fin  $2 \frac{1}{6}$  in total head length.

In formaline pale yellowish.

Length 35 to 60 mm.

(Tomiyama.)

Japan.



Genus Eviota Jenkins

Eviota JENKINS, Bull. U.S. Fish Comm., vol. 22, p. 501, 1902

(1903). (Type Eviota epiphanes JENKINS, monotypic.)

Allogobius WAITE, Rec. Austral. Mus., vol. 5, pt. 3, p. 176, 1904.

(Type Allogobius viridis WAITE, monotypic.)

Trimma JORDAN and SEALE, Bull. Bur. Fisher., vol. 25, p. 391, 1905

(1906). (Type Trimma caesiura JORDAN and SEALE, monotypic.)



Body elongate, compressed laterally. Head small or large, variously compressed. Snout short. Eye large, usually greater than snout and well advanced in head, also usually impinge on upper profile of head. Mouth terminal, oblique, with jaws subequal. Lips usually broad and fleshy. Maxillary extends below eye. Several rows of teeth in each jaw, outer row larger and less numerous. Interorbital narrow, eyes closely set. Preopercle entire. Scales ctenoid, large, 22 to 28 in lateral series. Head and predorsal naked, latter without median keel. Dorsals divided, first with 6 spines, second dorsal with spine and 8 to 10 rays. Anal with spine and 7 to 9 rays. Caudal rounded behind. Pectoral large, lateral, reaches anal. Ventral subequal with pectoral, narrow, well separated, ends of rays as well as those of lower pectoral rays fringed.

Minute gobies of the Indo-Pacific, most less than one inch in length. They are very abundant in the coral reefs of Oceania. Owing to their small size they are able to live in the smallest crevices of corals and other marine animals. They are usually best secured by breaking up pieces of coral over a canvas or cloth. Some also are taken in surface hauls of plankton and other masses of marine life, by means of a light at night; sometimes over deep water.

Trimma differs chiefly in its firmer and more solid body texture, and the predorsal region fully scaled.



Eviota lachdeberae Giltay

Eviota lachdeberae Giltay, Mém. Mus.  
Roy. Hist. Nat. Belg., hors sér., vol. 5,  
fasc. 3, p. 93, fig. 27, April 30, 1933  
(type locality, Between Banda Neira  
and Goenoeng).



Gonostoma rhodadenia (Gilbert).

Cyclothone rhodadenia Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 602, pl. 71, fig. 1 (type locality, Kaiwi Channel, in 411 to 442 fathoms; off Kauai, in 409 to 550 fathoms).--Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 34 (compiled).



Eviota minima Seale

Eviota minima Seale, Oceano. Pap.  
Bishop Mus., vol. 1, p. 125, 1901  
(type locality, Guam). — Gillay,  
Mém. Mus. Roy. Hist. Nat.  
Belg., hors sér., vol. 5, fasc. 3,  
p. 95, April 30, 1933 (reference).



Eviota nigriventris Giltay

Eviota nigriventris Giltay, mém. mus.  
Roy. Hist. Nat. Belg., hors sér., vol. 5,  
fasc. 3, p. 93, fig. 28, April 30, 1933  
(type locality, Banda Neira).



Cyclothone atraria Gilbert.

Cyclothone atraria Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 605, pl. 72, fig. 2 (type locality, Off Kauai, in 508 to 703 fathoms).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. p. 34 (type).



Eviota abax (Jordan and Snyder)

Asterropteryx abax JORDAN and SNYDER, Proc. U.S. Nat. Mus., vol. 24, p. 40, fig. 2, 1901 (type locality, Misaki, Sagami). - FRANZ, Abhandl. Kon. Bayer. Akad. Wiss., vol. 4, Suppl. Band 1, p. 66, 1910 (Misaki).

Asternopteryx abax BORODIN, Bull. Vanderbilt Mar. Mus., vol. 1, art. 3, p. 95, 1932 (Raiatea, Society Islands) (error).

Eviota abax JORDAN and SEALE, Bull. Bur. Fisher., vol. 25, p. 386, 1905 (1906) (reference). - JORDAN, TANAKA, SNYDER, Journ. College Sci. Tokyo, vol. 33, art. 1, p. 338, fig. 287, 1913 (reference). - FOWLER, Mem. Bishop Mus., vol. 11, No. 6, p. 441, 1934 (reference).

Eviota abax abax TOMIYAMA, Jap. Journ. Zool., vol. 7, No. 1, p. 46, 1936 (Kominato; Misaki; Yokkaite; Tosito; Amami-Osima).



Depth  $3 \frac{3}{5}$  to  $4 \frac{1}{4}$ ; head  $3 \frac{2}{5}$  to  $3 \frac{3}{5}$ , width  $1 \frac{1}{3}$  to  $1 \frac{2}{3}$ . Snout  $4 \frac{1}{5}$  to  $4 \frac{1}{4}$  in head; eye  $3 \frac{1}{3}$  to  $3 \frac{3}{5}$ , greater than snout or interorbital; maxillary reaches opposite hind pupil edge, length  $2 \frac{1}{4}$  to  $2 \frac{1}{2}$  in head; teeth firm, erect, simple, conic, upper with outer row widely spaced and inner as narrow band of minute teeth, lower triserial; interorbital very narrow, depressed between eyes and equals  $\frac{2}{5}$  of eye. Gill rakers  $3 + 5$  or 6 short, weak points, about  $\frac{1}{3}$  of gill filaments, which  $\frac{1}{2}$  of eye.

Scales 21 or  $22 + 2$  or 3 in axial lateral series; transversely 8 or 9 at soft dorsal and anal origins. Head, predorsal, pectoral base and prepectoral, chest and preventral region naked. Scales with 15 or 16 basal radiating striae; row of 35 to 47 apical denticles, uniformly short and simple.

D. VI - I, 10, f, first spine  $1 \frac{1}{2}$  in head to 3 in combined head and trunk, first branched ray  $1 \frac{1}{3}$  to  $1 \frac{3}{5}$  in head; A. f, 8, f, eighth ray  $1 \frac{1}{5}$  to  $1 \frac{1}{3}$ ; caudal 3 to  $3 \frac{1}{5}$  in rest of fish; least depth of caudal peduncle  $1 \frac{3}{4}$  to  $1 \frac{4}{5}$  in head; pectoral 3 to  $3 \frac{1}{8}$  in fish without caudal, rays f, 15; ventral  $1 \frac{1}{10}$  in head. Anal papilla flattened, end fringed, little longer than pupil but less than eye.

Light brown. Each scale with dark basal pocket made up of minute dark brown dots and due to scale rows form series of little crescents. Above opercle and each side of occiput blackish brown blotch little larger than pupil; posterior on predorsal 4 transverse dark brown bars; along dorsal bases about 10 dark brown blotches, contrasted but otherwise irregularly or little defined. Side of head with irregular and numerous dark brown spots, fewer in small specimens; also invade lips, interorbital and branchiostegals, where still smaller and more numerous. Two large and conspicuous blackish brown blotches on pectoral base. Iris gray, with



some small dark spots. Dorsals and caudal pale brown, with 7 to 9 dark brown small spots on each ray, these forming waved cross lines. Anal gray brown, paler basally. Paired fins brownish, ventral little darker terminally.

Japan. A handsome species with pleasing checkered color pattern, and the markings often quite variable. Though the under surface of the head is often quite speckled, the chest, breast and belly are mostly uniformly pale.



U.S.N.M., No. 49917. Misaki. Jordan and Snyder. Length 34 to 36 mm. Two examples.

U.S.N.M., No. 71405. Tanegashima. Albatross Collection 1906. Two examples. Length 13 to 40 mm.

U.S.N.M., No. 71450. Tanegashima. Albatross Collection 1906. Twenty-nine examples. Length 10 to 30 mm.

U.S.N.M., No. 71451. Misaki, Sagami. Albatross Collection 1906. Eighty-seven examples. Length 28 to 46 mm.

U.S.N.M., No. 71485. Nafa, Okinawa. Albatross Collection 1906. Three examples. Length 24 or 25 mm.

U.S.N.M., no. 53533. Tanegashima, Japan. Anderson and Anderson. Stanford University. Length 28 to 43 mm. Ten examples.



Eviota afelei Jordan and Seale

- Eviota afelei JORDAN and SEALE, Bull. Bur. Fisher., vol. 25, p. 387, fig. 77, 1905 (1906) (type locality, Pago Pago, Samoa). - FOWLER and SILVESTER, Carnegis Inst. Marine Pap., p. 125, 1922 (Pago Pago). - FOWLER, Mem. Bishop Mus., vol. 10, p. 394, 1928 (Pago Pago). - HERRE, Journ. Pan-Pac. Res. Inst., vol. 6, No. 4, p. 10, Oct.-Dec. 1931 (Moorea, Society Islands); *— Giltay, Mém. Mus. Roy. Hist. Nat. Belg., hors sér., vol. 5, fasc. 3, p. 94, April 30, 1933 (reference).* - FOWLER, Mem. Bishop Mus., vol. 11, No. 6, p. 441, 1934 (reference). - HERRE, Field Mus. Publ., Zool. Ser. vol. 21, No. 353, p. 348, April 15, 1936 (Takarua; Tahiti; Moorea; Suva).



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Depth 4 to  $4\frac{1}{2}$ ; head  $3\frac{1}{5}$  to  $3\frac{1}{2}$ , width  $1\frac{1}{4}$  to  $1\frac{1}{2}$ . Snout 5 to 6 in head; eye 3 to  $3\frac{7}{8}$ , greater than snout or interorbital; maxillary reaches  $\frac{1}{2}$  below eye, length  $2\frac{1}{4}$  to  $2\frac{4}{5}$  in head; teeth small, uniserial in each jaw with pair of enlarged wide set canines in mandible; interorbital level, depressed between eyes which impinging on upper profile, width half of eye. Gill opening lateral,  $\frac{1}{3}$  of head.

Scales  $25 + 2$  in axial lateral series; 9 transversely above anal origin. Head, predorsal, prepectoral, breast, chest and belly naked. Caudal base scaly. Scales with 10 or 11 basal radiating striae; 28 or 29 apical denticles, small, short points; circuli moderate.

D. VI - I, 9, I, first spine  $1\frac{2}{5}$  to  $1\frac{1}{2}$  in head, sixth ray  $1\frac{2}{5}$  to  $1\frac{2}{3}$ ; A. I, 7, I, fifth ray  $1\frac{4}{5}$ ; caudal  $1\frac{1}{8}$  to  $1\frac{1}{4}$ , hind edge convex; least depth of caudal  $1\frac{7}{8}$  to 2; pectoral 1 to  $1\frac{1}{8}$ , rays vi, 8; ventral I, 5, fin subequal with or equals head.

Pale brownish. Along lower side of body 9 slightly darker short vertical bars, of which 3 above anal base and 3 posterior. Iris gray. Several slightly darker blotches on cheek. Fins all uniformly pale.

Polynesia.



U.S.N.M., No. 51763. Apia, Samoa. Bureau of Fisheries. Type

18 mm. and two paratypes 15 mm.



Eviota caesiura (Jordan and Seale)

Trimma caesiura JORDAN and SEALE, Bull. Bur. Fisher., vol. 25,  
p. 391, fig. 83, 1905 (1906) (type locality, Apia, Samoa).

Eviota caesiura FOWLER, Bull. Bishop Mus., No. 38, p. 27, 1927  
(Tongareva); Mem. Bishop Mus., vol. 10, p. 395, 1928 (compiled).

Eviota macrophthalmus TOMIYAMA, Jap. Journ. Zool., vol. 7, No. 1,  
p. 47, fig. 6, 1936 (type locality, Hatizyozima, Idusiti-to, Japan).



Depth  $4 \frac{1}{5}$ ; head  $3 \frac{1}{6}$ , width  $1 \frac{3}{5}$ . Snout  $4 \frac{1}{8}$  in head from snout tip; eye 3, greatly exceeds snout or interorbital; maxillary reaches  $\frac{1}{6}$  in eye, length  $2 \frac{2}{5}$  in head from snout tip; teeth in jaws in 2 distinct irregular series, simple, conic, firm, and outer row in each jaw little larger and curved; front end of tongue broadly convex; interorbital low, narrow, depressed between eyes, width  $\frac{1}{4}$  of eye. Gill opening extends forward opposite middle of eye. Gill rakers  $2 + 10$ , short, lanceolate, little shorter than gill filaments which  $\frac{1}{2}$  of pupil.

Scales  $23 + 3$  in axial lateral series; 8 transversely above anal origin; 8 predorsal forward opposite hind pupil edge. Head largely naked, also chest, breast and prepectoral region; scales present on occipital, and postocular region. Caudal base scaly. Scales with 12 or 13 basal radiating striae; row of 40 apical denticles, rather short sharp points; circuli moderately fine.

D. VI - I, 8, 1, second spine  $1 \frac{1}{2}$  in total head length, last branched ray  $1 \frac{3}{4}$ ; A. I, 8, 1, last branched ray 2; caudal  $1 \frac{1}{5}$ , convex behind; least depth of caudal peduncle  $2 \frac{1}{5}$ ; pectoral  $1 \frac{1}{5}$ , rays 18; ventral rays I, 5, fins separated, length  $1 \frac{1}{8}$  in total head length. Anal papilla fleshy point long as pupil.

Very pale brownish, each scale bordered with dark brown. Along middle of back 7 or 8 ill defined pairs of short dark brown transverse bars, 2 at first dorsal and 3 below second dorsal. Iris gray. Two obscure brownish blotches on side of head and at prepectoral region, also head with minute scattered dark dots. Fins pale, vertical fins with obscure brownish spots, with 4 or 5 or more on spines or rays.

Polynesia. The eye is much more lateral in position than may be gathered from Jordan and Seale's figure, as its vertical diameter is equal to the infraorbital space measured to the lower edge of the profile of



the head, or as measured at the middle in the length of the eye. The 4 brown bars on the upper edge of the eye are also still quite distinct. The ventral rays are not fringed as in most species of Eviota. Also the scales are somewhat reduced and crowded directly behind the eyes, not shown in Jordan and Seale's figure.

Eviota macrophthalmus is said to be distinguished "by the absence of scales on the occiput and some other characters", though as it was based on an example but 12 mm. long the occipital scales may not have been developed.



U.S.N.M., No. 51772. Apia, Samoa, Bureau of Fisheries. Length

34 mm. Type of Trimma caesiura.



Eviota distigma Jordan and Seale

- Eviota distigma JORDAN and SEALE, Bull. Bur. Fisher., vol. 25, p. 389, fig. 79, 1905 (type locality, Pago Pago). - WEBER, Siboga Exped. vol. 57, Fische, p. 451, 1913 (Postillion Island). - FOWLER and SILVESTER, Carnegie Inst. Mar. Pap., p. 125, 1922 (Pago Pago). - FOWLER, Mem. Bishop Mus., vol. 10, p. 395, 1928 (Pago Pago). - HERRE, Journ. Pan-Pac. Res. Inst., vol. 7, No. 1, p. 395, Jan.-March 1932 (Tahiti). *- Hilgert, Mem. Mus. Roy. Hist. Nat. Belg., vol. 5, fasc. 3, p. 92, 1932 (between Pouteria and Eviota sp.).* - FOWLER, Mem. Bishop Mus., vol. 11, No. 6, p. 441, 1934 (reference). - HERRE, Field Mus. Publ. Zool. Ser. vol. 21, No. 353, p. 348, April 15, 1936 (Papeete; Suva).



Depth 4 to  $4 \frac{1}{8}$ ; head  $2 \frac{7}{8}$  to 3, width  $1 \frac{3}{4}$  to 2. Snout 5 to 6 in head; eye 3 to  $3 \frac{1}{8}$ , greatly exceeds snout or interorbital; maxillary reaches  $\frac{1}{3}$  to  $\frac{1}{3}$  in eye, length 3 to  $3 \frac{1}{2}$  in head; row of firm, conic teeth in each jaw; interorbital narrow, depressed between impinging eyes, width  $\frac{1}{3}$  of eye. Gill opening  $2 \frac{1}{2}$  in head.

Scales  $22 + 2$  in axial lateral series; 6 transversely above anal origin. Head, predorsal, prepectoral, breast, chest and belly naked. Caudal base scaly. Scales with 7 to 9 basal radiating striae; 21 or 22 apical denticles in single row, slender, pointed; circuli moderate.

D. VI - I, 8, 1, first 3 spines ending in filaments with first reaching nearly opposite hind end of last depressed dorsal ray, otherwise spines usually less than head, third ray  $1 \frac{3}{4}$  to  $1 \frac{4}{5}$  in head; A. I, 8, 1, third ray  $1 \frac{7}{8}$  to 2; caudal  $1 \frac{1}{6}$  to  $1 \frac{1}{5}$ , convex behind; least depth of caudal peduncle 2 to  $2 \frac{1}{8}$ ; pectoral slightly less than head to  $1 \frac{1}{8}$  times head, or reaches to  $\frac{1}{3}$  in anal base, rays ix, 6; ventral rays I, 5, fin 1 to  $1 \frac{1}{8}$  in head.

Pale brown. Along lower edge and sides of body 7 to 10 dark brown blotches, with 3 or 4 about anal base and 3 posterior, usually those on belly indistinct. Along edge of back 11 to 13 dark transverse blotches, usually 3 below each dorsal and last as dark bar close before caudal base. Round black spot at caudal base size of pupil. Two black wide set spots at caudal base. Side of head with several indistinct dark blotches or cloudings. Iris gray. Fins all pale.

Polynesia. Known by the presence of 2 conspicuous black spots on the pectoral base.



U.S.N.M., No. 51767. Apia, Samoa. Bureau of Fisheries. Type  
16 mm. long and 4 paratypes 14 to 16 mm.



Eviota epiphanes Jenkins

Eviota epiphanes JENKINS, Bull. U.S. Fish Comm., vol. 22, p. 501, fig. 42, 1902 (1903) (type locality, Honolulu). - JORDAN and EVERMANN, Bull. U.S. Fish Comm., vol. 23, pt. 1, p. 481, fig. 211, 1903 (1905) (Honolulu; Waikiki). - JORDAN and SEALE, Bull. Bur. Fisher., vol. 25, p. 386, 1905 (1906) (reference). - FOWLER, Copeia, No. 112, p. 84, Nov. 28, 1922 (Hawaii); Bull. Bishop Mus., No. 22, p. 30, 1925 (Honolulu). - FOWLER and BALL, Bull. Bishop Mus., No. 26, p. 26, 1925 (Ocean and Laysan Islands). - FOWLER, Bull. Bishop Mus., No. 38, p. 27, 1927 (Tongareva); Mem. Bishop Mus., vol. 10, p. 395, 1928 (Hawaiian Islands; Honolulu; Pearl City; Waikiki; Ocean Island; Laysan; Tongareva; type); vol. 11, No. 6, p. 441, 1934 (reference). — *Gillot, Mem. Mus. Roy. Hist. Nat. Belg., hors sér., vol. 5, fasc. 3, p. 94, April 30, 1933 (reference).*

Eviota abax epiphanes TOMIYAMA, Jap. Journ. Zool., vol. 7, No. 1, p. 46, fig. 5, 1936 (Okinosima).

Eviota gymnocephalus WEBER, Siboga Exped., vol. 57, Fische, p. 452, fig. 87, 1913 (type locality, Muaras Reef; Borneo Bank; Sulu Archipelago; Celebes; Siau; Karkaralong Island; Salibabu; Waigi; Sula Besi; Saleyer; Timor; Damar). - HERRE, Gobies of Philippines, p. 72, 1927



— Giltay, Mém. Mus. Roy. Hist. Nat. Belg., 2<sup>e</sup> sér., vol. 5, fac.  
3, p. 94, April 30, 1933 (reference).  
(copied). — ROXAS and MARTIN, Dep. Agric. Comm. Manila, Tech. Bull. 6,

p. 222, 1937 (reference).



Depth 4 to  $4 \frac{1}{8}$ ; head 4 to  $4 \frac{1}{5}$ , width  $1 \frac{4}{5}$ . Snout 5 in head; eye 3, greater than snout or interorbital; maxillary reaches  $\frac{1}{2}$  in eye, length  $2 \frac{1}{3}$  to  $2 \frac{2}{5}$  in head; teeth simple, conic, firm, uniserial in jaws; interorbital narrow, barely  $\frac{1}{4}$  of eye, depressed within eyes which slightly impinging on upper profile. Gill opening lateral, 2 in head.

Scales  $26 + 2$  in axial lateral series; 7 transversely above anal origin. Predorsal, head, prepectoral, breast, chest and belly naked. Scales with 8 to 11 basal radiating striae; 20 to 26 apical denticles, uniserial, short, simple points; circuli moderate.

D. VI - I, 9, i, third spine  $1 \frac{1}{2}$  to  $1 \frac{4}{7}$  in head, third branched ray  $1 \frac{2}{3}$  to  $1 \frac{3}{4}$ ; A. I, 8, i, third branched ray  $1 \frac{7}{8}$  to 2; caudal 1 to  $1 \frac{1}{8}$ , convex behind; least depth of caudal peduncle 2 to  $2 \frac{1}{8}$ ; pectoral 1 to  $1 \frac{1}{8}$ , rays 16 or 17; ventral rays I, 5, fin 1 to  $1 \frac{1}{8}$  in head. Anal papilla short fleshy point  $\frac{1}{2}$  of eye.

Light brown, with 5 close set darker brown transverse bands on predorsal which extend down to middle of side of head; on body 6 transverse darker bands, narrower than pale interspaces and last as dark blotch at caudal basally; 2 reach over anal base and between 2 on caudal peduncle below another smaller on lower surface of caudal peduncle. Several obscure dark spots on cheek and side of head. On line of back traces of intermediate dark cross bars like those on predorsal. Iris gray. Dorsal dark brown, first clouded with blackish brown and second with 6 or 7 dark bands inclined down posteriorly. Anal similar, only bars inclined up and posteriorly. Other fins pale to whitish.

East Indies, Philippines, Hawaii.



Four examples. Batan Island tide pools. June 5, 1909. Length 17 to 20 mm.

One example. Batan Island tide pool. July 22, 1909. Length 21 mm.

One example. D. 5174. March 5, 1908. Length 18 mm.

Two examples. Great Tobea Island tide pool. December 15, 1909. Length 19 to 24 mm.

U.S.N.M., No. 50720. Honolulu. Dr. O.P. Jenkins. 1889. Type 17. 50 mm.

U.S.N.M., No. 78064. Honolulu. Bureau of Fisheries. 1901. Five examples. Length 11 to 14 mm. Largest with 4 predorsal and 10 transverse dark body bands.

Two examples. Nogas Point, Panay. February 4, 1908. Length 21 or 22 mm.

Six examples. Great Tobea Island, Dutch East Indies. December 15, 1907. Length 15 to 19 mm.



Eviota grammistes Tomiyama

Eviota grammistes TOMIYAMA, Jap. Journ. Zool., vol. 7, No. 1,  
p. 47, fig. 7, 1936 (type locality, Hayama, Japan).



Depth 4; head  $3\frac{1}{2}$ , deeper than broad. Snout 4 in head from snout tip; eye  $2\frac{1}{2}$ , greatly exceeds snout; maxillary reaches  $\frac{1}{3}$  in eye, length  $2\frac{7}{8}$  in head from snout tip; teeth in a few rows, outer row larger; tongue rounded anteriorly; interorbital  $4\frac{1}{2}$  in eye. Gill membranes almost connected with each other below middle of eye.

Scales 30 in lateral series; transversely 11. Scales ctenoid, head and part along spinous dorsal base naked.

D. VI - I, 10, third spine  $1\frac{3}{4}$  in total head, first ray  $1\frac{7}{8}$ ; A. I, 9, first ray  $2\frac{1}{5}$ , eighth ray  $1\frac{3}{4}$ ; caudal  $1\frac{1}{8}$ , convex behind; least depth of caudal peduncle 2; pectoral rays 15, fin  $1\frac{1}{6}$  in total head length; ventral 1, rays I, 5.

In formaline grayish. Dark longitudinal band across eye extending along upper lateral part of body. Similar narrow one from upper orbital margin to soft dorsal. Dorsals dark. Caudal with 2 grayish stripes. Other fins pale.

Length 32 mm.

(Tomiyama.)

Japan. Known by its broad gill openings and the longitudinal dark lateral band.



Eviota herrei Jordan and Seale

Eviota herrei<sup>e</sup> JORDAN and SEALE, Bull. Bur. Fisher., vol. 25, p.

390, fig. 81, 1905 (1906) (type locality, Pago Pago; Apia). - FOWLER, Mem.

Bishop Mus., vol. 10, p. 395, 1928 (copied). — Giltay, Mém. Mus.

Roy. Hist. Nat. Belg., hors sér., vol. 5, fasc. 3, p. 94,  
April 30, 1933 (reference)



Depth  $3\frac{1}{2}$  to  $3\frac{2}{3}$ ; head  $2\frac{3}{4}$  to  $2\frac{7}{8}$ , width  $1\frac{2}{5}$  to  $1\frac{3}{4}$ . Snout 4 to 5 in head; eye 3 to  $3\frac{1}{5}$ , greater than snout or interorbital; maxillary reaches  $\frac{2}{5}$  to  $\frac{1}{2}$  in eye, length  $2\frac{1}{3}$  to  $2\frac{1}{2}$  in head; teeth very small or minute, uniserial or in very narrow bands; interorbital narrow, depressed between eyes, which impinge on upper profile, width  $\frac{1}{3}$  of eye. Gill opening 2 in head.

Scales 22 or 23 + 2 in axial lateral series; 8 or 9 transversely above anal origin. Predorsal, head, chest, breast, prepectoral and belly naked. Caudal base scaly. Scales with 12 or 13 basal radiating striae; 17 or 18 apical denticles, simple points; circuli moderate.

D. VI - I, 8, 1, first spine  $1\frac{1}{2}$  to  $1\frac{3}{4}$  in head, first branched ray  $1\frac{4}{5}$  to 2; A. I, 7, 1, last ray  $1\frac{7}{8}$  to 2; caudal 1 to  $1\frac{1}{10}$ , convex behind; least depth of caudal peduncle  $2\frac{1}{5}$  to  $2\frac{1}{4}$ ; pectoral 1, rays viii, 7; ventral rays I, 5, fin subequal with head. Anal papilla  $\frac{1}{2}$  of eye.

Pale brown, nearly uniform. Pale or whitish line along side of back whole length of trunk and tail; second axial along side of body; third along lower side of body. Iris gray. Fins largely uniform brownish.

Polynesia. This species may be said to be characterized largely by the 3 whitish longitudinal lines on the side of the body, but not indicated in the original figure by Jordan and Seale, though described in their text.



U.S.N.M., No. 51769. Apia, Samoa. Bureau of Fisheries. Type  
17 mm. long, and 2 paratypes 14 and 15 mm.



Eviota macrophthalmus Tomiyama

Eviota macrophthalmus TOMIYAMA, Jap. Journ. Zool., vol. 7, No.  
1, p. 47, fig. 6, 1936 (type locality, Hatizyozima, Idusiti-to).



Eviota prasites Jordan and Seale

Eviota prasites JORDAN and SEALE, Bull. Bur. Fisher., vol. 25, p. 387, fig. 76, 1905 (1906) (type locality, Pago Pago). - WEBER, Siboga Exped., vol. 57, Fische, p. 451, 1913 (Banda). - FOWLER, Mem. Bishop Mus., vol. 10, p. 395, 1928 (compiled). — Giltay, Mem. Mus. Roy. Hist. Nat. Belg., hors sér., vol. 5, fasc. 3, p. 95, April 30, 1933 (reference).



Depth 4; head 3, width  $1\frac{3}{4}$ . Snout 5 in head; eye  $3\frac{1}{5}$ , greater than snout or interorbital; maxillary reaches  $\frac{2}{5}$  in eye, length  $2\frac{1}{4}$  in head; teeth small, conic, pointed, firm, uniserial in jaw; interorbital narrow, level, depressed between eyes, which impinge little on upper profile of head, bony width  $\frac{2}{5}$  of eye. Gill opening extends forward opposite hind preopercle edge, slit  $1\frac{4}{5}$  in head.

Scales  $21 + 1$  or 2 in axial lateral series; 6 transversely above anal origin. Predorsal, head, prepectoral region, chest, breast and belly naked. Scales with 13 basal radiating striae; row of 25 or 26 short conic apical denticles; circuli moderate, obsolete to absent apically.

D. VI - I, 8, f, first 4 spines (damaged) extended to reach  $\frac{4}{5}$  to caudal base, last dorsal ray  $1\frac{1}{4}$  in head; A. I, 7, f, last ray  $1\frac{1}{3}$  or reaches caudal base; caudal 1, apparently rounded behind (damaged); least depth of caudal peduncle 2; pectoral  $1\frac{1}{8}$  times head, rays 16; ventral I, 5, fin subequal with head. Anal papilla  $\frac{1}{2}$  of eye, slender, tip notched.

Dull brownish, edges of scales with darker dots. Blackish blotch, little smaller than eye at bases of median lower caudal rays. Dark horizontal postocular bar, continued forward as band over front of snout to each eye. Three indistinct dark blotches on tail above anal base and 3 more on under surface of caudal peduncle. Iris gray. Fins all brownish, though 3 or 4 small dark brown spots on each membrane of dorsal and 5 or 6 on each caudal membrane.

Polynesia. Resembles Eviota distigma Jordan and Seale in the elongated front rays of the spinous dorsal, but with different coloration. The black stripe around the lower lip and the dusky blotch in the upper axil of the pectoral, described by Jordan and Seale are now scarcely evident in the type.



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U.S.N.M., No. 51768. Apia, Samoa. Bureau of Fisheries. Length  
26 mm. Type.



<sup>P</sup>  
Eviota Pruinosa Jordan and Seale

Eviota pruinosa JORDAN and SEALE, Bull. Bur. Fisher., vol. 25, p.

391, fig. 82, 1905 (1906) (type locality, Pago Pago, Samoa). — Giltay,  
Mém. Mus. Roy. Hist. Nat. Belg., hors sér., vol. 5, fasc. 3, p. 95, April 30,  
1933 (reference).

Eviota epiphanes (not JENKINS) FOWLER, Mem. Bishop Mus., vol. 10,

p. 395, 1928 (part).



Depth  $4\frac{1}{2}$ ; head 3, width  $1\frac{2}{5}$ . Snout 4 in head from snout tip; eye  $3\frac{3}{4}$ , greatly exceeds snout or interorbital; maxillary reaches  $\frac{1}{4}$  in eye, length  $2\frac{1}{2}$  in head from snout tip; teeth very minute, conic, firm, uniserial, in jaws only; interorbital depressed, low, narrow between eyes which impinge on upper profile, bony width  $\frac{1}{3}$  of eye. Gill opening  $2\frac{1}{4}$  in total head length.

Scales  $19 + 2$  in lateral axial series; 7 transversely above anal origin. Head, predorsal, prepectoral region, chest, breast and belly naked. Caudal base scaly. Scales with 10 to 12 basal radiating striae; row of 21 or 22 simple, conic denticles; circuli moderate.

D. VI - I, 8, 1, second spine  $1\frac{3}{4}$  in total head length, second branched ray  $1\frac{1}{4}$ ; A. I, 7, 1, last ray  $1\frac{3}{5}$ ; caudal  $1\frac{1}{10}$ , convex behind; least depth of caudal peduncle  $2\frac{1}{4}$ ; pectoral 1, rays 15, fin reaches front of anal; ventral I, 5, fin  $1\frac{1}{6}$  in total head length. Anal papilla small fleshy point less than  $\frac{1}{2}$  of eye.

Pale brown, under surface of body lighter to whitish. Iris pale brown. Dark brown ovate postocular blotch little shorter than eye, inclined upward. Six or 7 transverse dark brown blotches on back and on lower part of side alternating as many more, though laterally boundaries of all obscure. Brown horizontal bar on cheek and 4 or 5 dark blotches on each mandibular ramus. Fins all very light. Each dorsal spine with 3 or 4 small dark brown spots, similarly on dorsal rays. Caudal with 2 basal dark brown blotches, one above the other, and 4 or 5 transverse series of dark brown spots, outer small and median much broader. Pectoral with 4 or 5 faint dark bars and 2 brown basal spots, of which lower much more distinct. Other fins pale to transparent.

Polynesia.



U.S.N.M., No. 51779. Apia, Samoa. Bureau of Fisheries. Length

24 mm. Type.



Eviota sealei Herre

Eviota sealei HERRE, Gobies of Philippines, p. 73, 1927 (type

locality, Puerto Galera, Mindora); Fishes Herre 1931 Philippine Exped.,  
- *Giltay, Mém. Mus. Roy. Hist. Nat. Belg., hors sér., vol 5, fasc. 3,*  
*p. 81, 1934 (Culion; Dumaguete).* - ROXAS and MARTIN, Dep. Agric. Comm.,  
Manila, Tech. Bull. 6, p. 222, 1937 (reference).



Depth  $4 \frac{1}{3}$ , strongly compressed; head  $3\frac{1}{4}$ , stout, heavy, wide as deep. Snout short, blunt, pointed, 2 in eye; eye 4 in head, very high but not quite touching each other; maxillary reaches  $\frac{1}{2}$  in eye; mouth strongly oblique, cleft reaching below front part of eye.

Scales 22 in lateral series; 7 transversely. Scales on sides ctenoid.

D. VI - I, 8, first dorsal moderately elongated, longest spine little less than depth, second dorsal and anal similar in outline and rather low; A. I, 8; caudal rounded, equals head in length; ventrals very long and narrow, extend to anal fin.

In alcohol yellowish brown, with 8 or more dark brown spots, made up of many fine specks, on head, and 2 similar spots on pectoral base. Two short dark brown bands over nuchal region, and 8 faint bands on ventral and dorsal surfaces which scarcely extend upon sides. Dark spot on side of caudal peduncle. Dorsals, anal and caudal marked by dark punctulations, first dorsal distinctly barred.

Length 17 mm. (Herre.)

Philippines. Said to differ from Eviota gymnocephalus Weber in slightly larger scales, and 8 dark bands on dorsal and ventral surfaces.



Two examples. Great Tobea Island. December 15, 1909. Length  
20 or 21 mm.



Eviota sebreei Jordan and Seale

Eviota sebreei JORDAN and SEALE, Bull. Bur. Fisher., vol. 25,

p. 390, fig. 80, 1905 (1906) (type locality, Apia, Samoa). — Giltay, hiém.  
Roy. Mus. Hist. Nat. Belg., hors sér., vol. 5, fasc. 3, p. 95, April 30, 1933 (Reference).

Eviota epiphanes (not JENKINS) FOWLER, Mem. Bishop Mus., vol. 10,

p. 395, 1928 (part).



Depth  $4\frac{1}{2}$ ; head  $3\frac{1}{4}$ , width  $1\frac{7}{8}$ . Snout  $5\frac{1}{5}$  in head; eye  $3\frac{1}{8}$ , greatly exceeds snout or interorbital; maxillary reaches  $\frac{1}{2}$  in eye, length  $2\frac{4}{5}$  in head; teeth simple, conic, uniserial in jaws; interorbital low, depressed between eyes which impinge on upper profile, bony width about  $\frac{2}{5}$  of eye. Gill opening 2 in head.

Scales  $22 + 2$  in axial lateral series; 7 transversely above anal origin. Predorsal, head, chest, breast, prepectoral and belly naked. Caudal base scaly. Scales with 8 to 10 basal radiating striae; row of 20 or 21 low apical denticles; circuli coarse.

D. VI - I, 8, 1, second spine  $1\frac{3}{5}$  in head, first branched ray 2; A. I, 9, 1, fin height  $1\frac{2}{3}$ ; caudal (damaged) 1; least depth of caudal peduncle  $2\frac{1}{2}$ ; pectoral 1, rays 15; ventral I, 5, fin subequal with head. Anal papilla short, slender, flap, tip notched.

Brown. Iris gray. Black blotch on base of caudal, reflected out on bases of lower median rays. Fins all brownish.

Polynesia. The details of color given by Jordan and Seale as: the wide grayish band from posterior of eye along lower part of side to caudal; a narrow brown line from posterior of eye along middle of body to caudal; dark line from eye down side of snout; upper half of spinous dorsal whitish, lower half dusky; soft vertical fins more or less shaded dusky; paired fins white; cannot now be seen clearly in the type.



U.S.N.M., No. 51765. Apia, Samoa. Bureau of Fisheries. Length  
16 mm. to end of broken caudal. Type.



Eviota smaragdus Jordan and Seale

Eviota smaragdus JORDAN and SEALE, Bull. Bur. Fisher., vol. 25,

p. 388, fig. 78, 1905 (1906) (type locality, Pago Pago). - HERRE, Journ.

Pan-Pac. Res. Inst., vol. 6, No. 4, p. 14, Oct.-Dec. 1931 (New Hebrides);

- *Giltay, Mém. Mus. Roy. Hist. Nat. Belg., hors. sér., vol. 5, fasc. 3, p. 75, April 30, 1933 (reference) — Herre*

Field Mus. Publ. Zool. Ser., vol. 21, No. 353, p. 349, April 15, 1936

(New Hebrides specimen).

Eviota epiphanes (not JENKINS) FOWLER, Mem. Bishop Mus., vol. 10,

p. 395, 1928 (part); vol. 11, No. 6, p. 441, 1934 (part).



Depth  $4 \frac{7}{8}$  to 5; head  $3 \frac{2}{5}$  to  $3 \frac{3}{4}$ , width  $1 \frac{1}{2}$  to  $1 \frac{2}{3}$ . Snout  $4 \frac{1}{2}$  to 5 in head; eye  $3 \frac{1}{3}$  to  $3 \frac{1}{2}$ , greatly exceeds snout or interorbital; maxillary reaches  $\frac{2}{5}$  to  $\frac{1}{2}$  in eye, length  $2 \frac{1}{2}$  to  $2 \frac{4}{5}$  in head; teeth conic, simple, small, uniserial in jaws; interorbital narrow, depressed, sunken between eyes and impinging on upper profile of head, bony width  $\frac{2}{5}$  of eye. Gill opening 2 in head.

Scales  $24 + 2$  in lateral axial series; 7 transversely above anal origin. Predorsal, head, breast, chest, prepectoral region and belly naked. Caudal base scaly. Scales with 13 or 14 basal radiating striae; row of 30 to 35 apical denticles, slender, moderate and sharply pointed; circuli coarse.

D. VI - I, 9, 1, first spine extends to middle of soft dorsal base, in small examples first spine  $1 \frac{1}{2}$  in head, first branched ray  $1 \frac{1}{2}$  to 2; A. I, 8, 1, last branched ray  $1 \frac{2}{3}$  to 2; caudal 1 to  $1 \frac{1}{5}$ , convex posteriorly; least depth of caudal peduncle 2 to  $2 \frac{1}{5}$ ; pectoral 1, rays 16; ventral I, 7, fin  $1 \frac{1}{6}$  to  $1 \frac{1}{3}$  in head. Anal papilla slender cutaneous flap, end notched, about long as pupil.

Brown, nearly uniform or seldom scarcely paler. Iris gray. Pair of close set dark brown spots midway in predorsal, followed by 10 to 12 more dark though less conspicuous spots all along back, of which 4 usually below each dorsal. Five or 6 still less distinct darker blotches along lower edge of tail, with at least 3 on under surface of caudal peduncle. Ill defined dark blotch at caudal base. Fins brownish, often little darker marginally. Caudal with 4 transverse series of dark spots on membranes. Paired fins uniformly pale.

Polynesia. Characterized by the pair of close set dark brownish to black spots on the occiput, well behind the eyes or midway in the predorsal region.



U.S.N.M., No. 51764. Apia, Samoa. Bureau of Fisheries. Type

21 mm. long and six paratypes 17 to 19 mm.



Eviota viridis (Waite)

Allogobius viridis WAITE, Rec. Austral. Mus., vol. 5, p. 177, pl.

23, fig. 3, 1904 (type locality, Lord Howe Island).

Eviota viridis MC CULLOCH, Rec. Austral. Mus., vol. 9, No. 3, p. 386,

1913 (between Port Curtis and Torres Strait, Queensland). - MC CULLOCH and

OGILBY, Rec. Austral. Mus., vol. 13, No. 10, p. 260, July 14, 1919

- Mc Culloch and Whitley, Mem. Queensland Mus., vol. 8, pt. 2, July 7, 1925 (reference).  
(reference).<sup>v</sup>- FOWLER and BALL, Bull. Bishop Mus., No. 26, p. 26, 1925

(French Frigates Shoal; Laysan; Ocean I.; Johnston I.; Wake I.). - FOWLER,

Bull. Bishop Mus., No. 38, p. 27, 1927 (Oahu; Howland I.; Christmas I.;

Tongareva; Canton I.); Mem. Bishop Mus., vol. 10, p. 395, 1928 (Hawaiian

Islands; Honolulu; Pearl 'City; Waikiki; Ocean I.; Laysan; Tongareva). -

MC CULLOCH, Mem. Austral. Mus., No. 5, pt. 3, p. 368, Nov. 28, 1929

(reference). - HERRE, Journ. Pan-Pac. Res. Inst., vol. 6, No. 4, p. 14,

- Giltay, Mem. Mus. Roy. Hist. Nat. Belg., hors sér., vol. 5, fasc. 3, 1935, April 30, 1935 (reference).  
Oct.-Dec. 1931 (New Hebrides).<sup>1</sup>- FOWLER, Mem. Bishop Mus., vol. 11, No. 6,

p. 441, 1934 (Vila and Santo, New Hebrides; Samoa; Rarotonga). - HERRE,

Field Mus. Publ. Zool. Ser., vol. 21, No. 353, p. 349. April 15, 1936

(Suva).

Eviota zonura JORDAN and SEALE, Bull. Bur. Fisher., vol. 25, p. 386,



fig. 75, 1905 (1906) (type locality, Apia; Pago Pago). - KENDALL and  
 GOLDSBOROUGH, Mem. Mus. Comp. Zool., vol. 26, p. 317, 1911 (Fakarava;  
 Rangiroa; Makemo). - WEBER, Siboga Exped., vol. 57, Fische, p. 452, 1913  
 (Savu I.). - FOWLER and SILVESTER, Carnegie Inst. Marine Pap., p. 124,  
 1922 (Pago Pago). - FOWLER, Bull. Bishop Mus., No. 22, p. 35, 1925 (Samoa).

Eviota viridis queenslandica WHITLEY, Fish. G<sup>reat</sup>, Barrier Reef Exped.  
 1928-29, Sci. Rep., vol. 4, No. 9, p. 301, 1932 (type locality,

Eviota abax epiphanes (not JENKINS) TOMIYAMA, Jap. Journ. Zool.,  
 vol. 7, No. 1, p. 46, fig. 5, 1936 (Okinosima).



Depth  $3 \frac{3}{5}$  to  $4 \frac{1}{2}$ ; head 3 to  $3 \frac{1}{4}$ , width  $1 \frac{1}{3}$  to  $1 \frac{1}{2}$ . Snout 4 to  $5 \frac{1}{2}$  in head; eye  $3 \frac{1}{8}$  to  $3 \frac{3}{4}$ , greater than snout or interorbital; maxillary reaches  $\frac{1}{2}$  in eye, length  $2 \frac{1}{5}$  to  $2 \frac{1}{2}$  in head; teeth simple, conic, uniserial, usually with pair of little enlarged wide set canines in front of lower jaw; interorbital narrow, depressed, sunken between eyes which impinge on upper profile, bony width  $\frac{1}{3}$  eye diameter. Gill opening 2 in head.

Scales  $26 + 2$  in lateral axial series; 7 transversely above anal origin. Predorsal, head, prepectoral region, breast and chest naked. Caudal base scaly. Scales with 14 to 16 basal radiating striae; 25 to 31 apical denticles, uniserial; circuli moderately coarse.

D. VI - I, 10, 1 or I, 9, 1, first spine sometimes filamentous or reaches middle of base of soft dorsal, to  $1 \frac{2}{3}$  in head, second branched ray  $1 \frac{4}{5}$  to 2; A. I, 8, 1, seventh branched ray  $1 \frac{1}{2}$  to  $1 \frac{3}{5}$ ; caudal 1 to  $1 \frac{1}{5}$ , convex behind; least depth of caudal peduncle  $1 \frac{2}{3}$  to 2; pectoral 1 to  $1 \frac{1}{5}$  times head, rays 15; ventral I, 5, fin subequal with head. Anal papilla long as pupil.

Pale brownish, with 7 obscure narrow transverse darker cross bars, last close before caudal base and with black, median contrasted blotch less than eye. Transverse dark bands with 2 above anal base and 3 on lower surface of caudal peduncle. Iris gray. Sides and lower surface of head with slightly darker brown irregular blotches, more as speckled on mandible and branchiostegal region, though not greatly contrasted. First dorsal dark gray terminally, cream white basally. Second dorsal brownish basally and broadly whitish terminally, only edge narrowly gray. Anal dark brown. Caudal light brown, yellowish basally and with 4 or 5 narrow transverse



slightly darker brown bands medially. Paired fins pale to whitish.

Japan, Polynesia. Distinguished chiefly by its coloration, the median black spot close before the caudal base quite characteristic. Though not shown in Jordan and Seale's figure the first dorsal spine is often prolonged in a filament.



U.S.N.M., No. 51766. Pago Pago, Samoa. Bureau of Fisheries.

Type of Eviota zonura 21 mm. long and 20 paratypes 12 to 22 mm.

U.S.N.M., No. 65829. Rangiroa, Taumotus. Albatross Collection

1899-1900. Length 15 or 16 mm. Two examples.

U.S.N.M., No. 65830. Makemo, Taumotus. Albatross Collection

1899-1900. Length 15 mm.

U.S.N.M., No. 71452. Okinawa, Nafa, Riu Kiu, Albatross Collection

1906. Length 11 to 25 mm. One-hundred and thirty eight examples.



Genus Pogonoculius Fowler

Pogonoculius FOWLER, Proc. U.S. Nat. Mus., vol. 85, No. 3032, p.  
134, 1938. (Type Pogonoculius <sup>z</sup>Xebra Fowler, orthotypic.)



~~Genus~~ Tentaculius new genus ~~Fowler~~

Body elongate, greatly compressed. Head small, short, compressed. Snout short, obtuse. Eye moderate, well advanced and high in head. Mouth terminally superior, subvertical. Mandibular bones well separated, protrude before mouth, interspace or chin, deep, with median free tentacle nearly long as combined snout and eye, and followed by dermal ridge to isthmus. Teeth large, simple, uniserial. Gill openings lateral. Body largely scaled, small irregular scales only distinct on tail posteriorly. Two dorsals, spines 6, rays 28. Anal rays 26, fin like second dorsal and opposite. Caudal peduncle short, free. Caudal moderate truncate. Pectoral short, rounded, with broad base. Ventrals close, distinctly separated and much longer than pectorals. Vent close before anal.

Unique in the mental tentacle and combination of structural characters, such as the small head, long ventrals, strong dentition, long second dorsal and anal, etc. It is perhaps related to Ptereleotris Gill, differing sharply in the characters noted above, especially its obsolete lepidosis, coloration, general appearance etc.

(tentacle + Culius an old name for Electris.)



Pogonoculius zebra Fowler

Pogonoculius zebra FOWLER, Proc. U.S. Nat. Mus., vol. 85, No.

3032, p. 134, 1938 (type locality, Dasol Bay).



~~Tentaculius~~ <sup>z</sup>~~ebra~~ new species, ~~Fowler~~

Depth  $5 \frac{1}{3}$ ; head  $4 \frac{3}{5}$ , width  $1 \frac{3}{4}$ . Snout 5 in head from snout tip; eye 4, greater than snout, equals interorbital; maxillary subvertical, reaches  $\frac{4}{5}$  to eye, length 3 in head from snout tip; teeth conic, large, well spaced, sharp pointed, 10 in each jaw, none on palate; interorbital  $3 \frac{3}{5}$  in head from snout tip, low, convex. Gill opening restricted, leave moderately narrow isthmus.

Scales minute, nonimbricate, rounded, imperfectly developed or only on tail where more numerous posteriorly.

D. VI - 28, i, last spine  $1 \frac{2}{3}$  in total head length, first ray  $1 \frac{3}{4}$ ; A. 26, i, second ray  $1 \frac{3}{4}$ ; caudal 1, truncate; least depth of caudal peduncle 2; pectoral  $1 \frac{1}{8}$ , rays 23; ventral I, 4, fin 1 in head.

Brown, scarcely paler below, with 21 narrow pale brown transverse bands, narrower than dark interspaces, and each with dark brown bordering line. Iris grayish. Fins all light brown like general body color, only upper edge of both dorsals narrowly black with submarginal gray line. Broad pale brown transverse band on pectoral base, its front and hind margins each with dark brown bordering line.

Diagnosis contained in the description of the genus.

U.S.N.M., No. 99048. Dasol Bay. May 8, 1909. Length 95mm.

[1535.] Type.

~~(Zebra, so called with reference to the striped appearance.)~~



Family Gobiidae

558

The True Gobies

Body variably short to more or less elongate in form, cylindrical or subcylindrical and laterally compressed, especially posteriorly or tail. Head short to long. Snout variable. Eyes not (especially prominent or stalked). Mouth very variable, large or small, vertical to horizontal. Teeth in one to many rows, fixed or depressible, erect or horizontal. simple, pointed, canine like or curved, or ends variably enlarged, bicuspid or tricuspid, in either or both jaws; may be placed on lips in movable band; rarely present on palate. Body usually scaled, with ctenoid or cycloid scales, or both, sometimes



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partly and rarely naked; scales  
vary from 20 to 200 in a  
lateral series on body, usually  
more or less irregularly disposed.  
Dorsals variously though usually  
separated, anterior or spinous  
fin rarely absent of 3 to 9 spines,  
and posterior rayed fin usually  
larger, rays varying 5 to 30  
with usually 8 to 11. Caudal  
variable, usually well developed,  
sometimes elongated. Pectorals  
well developed. Ventrals usually  
entirely connected by membrane,  
rarely divided and then at  
least basal part of connecting  
membrane present; fins usually  
form sucking or vacuum disk,  
so fish may attach more or less  
firmly to objects; each fin formed  
of spine and 4 or 5 rays.  
variably short, rounded to circular,



edges entire or notched, and basal frenum in front variably thick or thin, and edge variably entire or lobate; fins or, disk may be close or well separated and joined to belly most their extent or entirely free.

A large family including upward of 300 species and perhaps 100 genera, though the latter are mostly unsatisfactorily known and defined. Most of the species are dull colored, though some coral reef forms are with brilliant colors. Most live on the sea bottom, living in coral reefs, tide pools, seeking shelter among rocks and boulders, or in the crevices of sedentary marine animals like sponges, corals, etc. Some small or minute species live in lakes or streams and are fresh water



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in their habitat. Most however  
spawn in the sea and the young  
may ascend rivers or live  
in streams until matured.  
Quite characteristic of the gobies  
is the extensive series, or lines  
of <sup>minute</sup> papilla on the head, <sup>usually</sup> forming  
definite patterns and of taxonomic  
value.



Analysis of genera

562

A. Ventral sucker not cup-shaped or more or less adherent to belly.

b. Lower lip without band of movable horizontal teeth, or lips never with bands of teeth.

a. Dorsal spines 5 or less, or none.

bd. No first dorsal fin.

cd. Head depressed; maxillary end embedded below muscles of cheek. Luciogobius

d.<sup>2</sup> Head not depressed; maxillary end ensheathed, not embedded below muscles of cheek. Leucopsarion

d.<sup>2</sup> Dorsal spines 3.

f.<sup>1</sup> D. III — I, 6 to 8; scales 23 or 24. Mistichthys

f.<sup>2</sup> D. III — 11; scales obscure, very small, embedded. Astrab

f.<sup>3</sup> D. III — 18; A. 11; scales very small, embedded. Tutaenichthys

d.<sup>3</sup> Dorsal spines 4 or 5; scales absent, or large when present.

g.<sup>1</sup> No scales; teeth uniserial.



563  
h.<sup>1</sup> Pair of lower post-symphyseal canines. Mirogobius  
h.<sup>2</sup> no post-symphyseal canines. Herreolus

g.<sup>2</sup> Scales 25 to 28.

gi.<sup>1</sup> Cheek and opercle covered with large scales. Redigobius

gi.<sup>2</sup> Head naked.

gi.<sup>3</sup> ~~Head naked.~~

gi.<sup>3</sup> ~~Head naked.~~ Gobiella

gi.<sup>3</sup> ~~Head naked.~~ Leptogobius

g.<sup>3</sup> Dorsal spines 6 or more.

h.<sup>1</sup> Body scaled.

il.<sup>1</sup> Teeth all simple.

jm.<sup>1</sup> no barbels.

kn.<sup>1</sup> Conspicuous ridges and flaps of skin on top and sides and underparts of head.

lq.<sup>1</sup> no teeth on vomer. Callogobius

lq.<sup>2</sup> Two or 3 large blunt teeth on vomer.

mf.<sup>1</sup> Scales 60 to 65. Mars

mf.<sup>2</sup> Scales 70 to 85. Smilogobius

kn.<sup>2</sup> no conspicuous ridges and skinny flaps on top and sides of head.

mf.<sup>3</sup> Scales large, ctenoid, not over 38; second dorsal and anal with I, II.



- (564)
- pr. Preopercle without strong spine at angle directed back.
- qs. Caudal not lanceolate or greatly elongate.
- t. Dorsal spines 6.
- ru. Tongue rounded, truncate, scarcely emarginate.
- sv. Head not deep, subglobose.
- tw. Hind preopercle edge not toothed.
- ux. Lape without median skinny crest.
- vy. Head without high skinny crest.
- wz. No weak spine on each inner edge of mandible.
- xa. Color not yellow, or with several contrasted transverse black bands. B.
- ybb. Maxillary not prolonged back behind eye; depth  $5\frac{3}{4}$ .
- cc. Mouth cleft nearly vertical; minute fragile fishes. Gobiopsis
- cc. Mouth cleft terminally inferior; ventral small; depth  $5\frac{3}{4}$ . Vailima
- ybb. Maxillary prolonged back behind eye. Gobiopsis



365  
gdd.<sup>1</sup> Snout long as eye.  
gdd.<sup>2</sup> Snout  $2\frac{1}{2}$  in eye.  
age.<sup>1</sup> First predorsal

scale close behind eye  
enlarged. Engrathogobius

age.<sup>2</sup> First predorsal scale  
not enlarged. Pseudogobiopsis

xx.<sup>2</sup> Yellow, with several black  
transverse bands. Brachygobius

z.<sup>2</sup> Weak spine on each inner  
edge of mandibular ramus.  
Heteroplopus

xy.<sup>2</sup> Head with high, thin, skinny  
crest. Cristatogobius

z.<sup>2</sup> Hape with skinny median crest.  
Lophogobius

w.<sup>2</sup> Hind preopercle edge toothed;  
first dorsal spine hard, stiff,  
sharp pointed. Oplopus

x.<sup>2</sup> Head very deep, subglobose;  
body plump; pair of post-sym-  
physeal canines. Rupellia

ff.<sup>1</sup> Tongue free from  
floor of mouth. Gobius

ff.<sup>2</sup> Tongue adnate  
below almost to tip.

egg.<sup>1</sup> Lips thin; snout  
shorter to subequal  
with eye.



~~dh.~~ hh. First predorsal  
scale not enlarged;  
D. VI - 11 to 13; A. 11 to 13.  
Stenogobius

~~dh.~~ hh. <sup>2</sup> First predorsal  
scale enlarged,  
behind eyes; D. VI -  
7 to 9; A. 7 to 9.  
Stigmatogobius

~~gg.~~ gg. <sup>2</sup> Lips very thick;  
snout well over 2 eye  
diameters. Anaous

~~ii.~~ ii. <sup>2</sup> Tongue well notched in front;  
lower jaw protrudes. Glossogobius

~~ix.~~ ix. <sup>2</sup> Caudal lanceolate, greatly extended;  
maxillary long, often extended  
well behind eye. Waitia

~~ix.~~ ix. <sup>2</sup> Preopercle with large strong  
spine directed back. Gladiogobius

~~ix.~~ ix. <sup>2</sup> Scales smaller, 50 to 100 or more.  
~~ii.~~ ii. <sup>1</sup> Caudal rounded or pointed, not  
lanceolate, elongate or more than head.

~~ix.~~ ix. <sup>1</sup> Tongue rounded, truncate, or  
scarcely emarginate.

~~ix.~~ ix. <sup>1</sup> Scales 55 to 58; depth  $6\frac{4}{5}$  to 7.  
Eitraria

~~ix.~~ ix. <sup>2</sup> Scales 70 to 80. Cryptocentroides

~~ix.~~ ix. <sup>3</sup> Scales 85 to 140. Cryptocentrus



567  
~~bb.~~<sup>2</sup> Tongue well notched in front;  
scales 70 to 100.

~~ll.~~<sup>1</sup> Pectoral without free rays;  
pair of posterior interocular  
pores. Chaenogobius

~~ll.~~<sup>2</sup> Upper pectoral rays detached;  
no interocular pores. Chasmichthys

~~ll.~~<sup>2</sup> Caudal well elongated, lanceolate,  
greatly longer than head.

~~ii.~~<sup>1</sup> Vomer with 2 large flat  
teeth; scales 50 to 75; D. VII -  
I, 10. Myersina

~~ii.~~<sup>2</sup> No vomerine teeth.

~~ii.~~<sup>1</sup> Lower teeth erect, biserial or  
triserial, outer enlarged;  
scales 58 to 80; D. VII 11 to 15;  
A. 11 to 16. Paroxyrichthys

~~ii.~~<sup>2</sup> Lower teeth erect, biserial, with  
inner row of stout curved  
canines; scales 104; D. VII - I, 15;  
A. I, 16. Biat

~~ii.~~<sup>3</sup> Lower teeth erect, without  
canines, not uniserial.

Oxyrichthys  
~~ii.~~<sup>4</sup> Lower teeth horizontal; uniserial.

~~bb.~~<sup>1</sup> Lower teeth inclined inward,  
with pair of post-symphysal  
canines; scales 65 to 75; no snout



flap with projection.

Paraprocyptes

~~lxx.~~<sup>2</sup> Lower teeth long, blunt, horizontal, without canines; scales 75 to 90; pair of large teat-like flaps hang down over mouth. Apocryptichthys

~~m.~~<sup>2</sup> Dorsal spines 8.

~~lxx.~~<sup>1</sup> Pectoral rays confluent; front edge of ventral sucker fringed.

Licanthogobius

~~lxx.~~<sup>2</sup> Upper pectoral rays detached; front edge of ventral sucker entire. Pterogobius

~~lxx.~~<sup>2</sup> Barbels on chin, or edge of lower jaw, or under side of head, or on all of them.

~~lxx.~~<sup>1</sup> Head depressed.

~~lxx.~~<sup>1</sup> D. VII, I, 11; head naked.

~~lxx.~~<sup>1</sup> Scales 39.

Pipidonia

~~lxx.~~<sup>2</sup> Scales 46.

Pogonogobius

~~lxx.~~<sup>2</sup> D. VII, I, 15 or 16; top and sides of head scaly. Lophiogobius

~~lxx.~~<sup>2</sup> Head deeper than broad.

~~lxx.~~<sup>1</sup> Pectoral rays confluent; scales 28 to 55.

~~lxx.~~<sup>1</sup> Barbels 90 on chin and lower jaw. Parachaeturichthys



569  
uu.<sup>2</sup> Lower jaw with 3 pairs of barbels. Chaetrichthys

uu.<sup>3</sup> Single pairs of barbels at symphysis of mandible. Illana

tt.<sup>2</sup> Upper pectoral rays detached; scales 60; lower jaw with more than 20 barbels. Sagamia

il.<sup>2</sup> Teeth more or less bilobed or tricuspid in outermost row.

vv.<sup>1</sup> One row of teeth in each jaw, bilobed and more or less horizontal in lower jaw, with pair of post-symphysal canines.

ww.<sup>1</sup> Eye in front half of head; D. V or VI, 15 to 23. Gobileptes

ww.<sup>2</sup> Eye in first third of head; D. V or VI, 31 or 32.

Pseudapocryptes

vv.<sup>2</sup> Two rows of teeth in each jaw, outer row tricuspid.

tt.<sup>1</sup> Sides of head with rows of barbels. Triaenopogon

tt.<sup>2</sup> No barbels. Tridentiger

h.<sup>2</sup> Body nearly or entirely naked; dorsal and anal distinct from caudal.



~~nn~~<sup>570</sup> ~~yy~~! Teeth all simple; no crest on head.  
~~vv~~<sup>vv</sup> ~~zz~~! Maxillary moderate not ex-  
tended beyond eye.

~~aaa~~<sup>aaa</sup>! Body elongate fusiform.

~~bbb~~<sup>bbb</sup>! No scales; D. VI-I, 9.

Alepiogobius

~~bbb~~<sup>bbb</sup><sup>2</sup>! Few small scales posteriorly;  
D. VI 11 or 12.

Kelloggella

~~aaa~~<sup>aaa</sup><sup>2</sup>! Body deep, oval, much fattened  
laterally.

~~ccc~~<sup>ccc</sup>! Mouth cleft small, horizontal;  
jaws subequal. Gobiodon

~~ccc~~<sup>ccc</sup><sup>2</sup>! Mouth cleft large, oblique;  
lower jaw projects. Lubricigobius

~~vv~~<sup>vv</sup><sup>2</sup>! Maxillary elongate, extends far  
back behind eye. Schismatogobius

~~nn~~<sup>nn</sup><sup>2</sup>! Lower teeth tricuspid; an erect  
crest from snout tip to nape. Itaya

~~vv~~<sup>vv</sup><sup>2</sup>! Lower lip with row of needle like  
movable small teeth; head  $2\frac{1}{2}$ ;  
D. V-8; A. 8. Pleuronicya



A.<sup>2</sup> Ventral sucker cup shaped,  
either only with bases or wholly  
joined with belly.

zz.<sup>1</sup> Ventrals form round sucking  
disk attached to belly.

aaa.<sup>1</sup> Body with ctenoid scales.

Sicydium

aaa.<sup>2</sup> Body naked, or cycloid scales  
posteriorly.

Lentipes

zz.<sup>2</sup> Ventrals united, not adherent  
to belly.

bbb.<sup>1</sup> Labial teeth in lower lip.

ccc.<sup>1</sup> Upper teeth close set, more  
or less tricuspid. Stiphodon

ccc.<sup>2</sup> Upper teeth not tricuspid,  
uneven, partly caninoid. Pleurosicya

bbb.<sup>2</sup> No labial teeth; scales not  
deciduous, cycloid.

ddd.<sup>1</sup> No lower canines.

eee.<sup>1</sup> Mouth cleft oblique; second  
dorsal and anal subtriangulate, acute.

Leptogobius

eee.<sup>2</sup> Mouth cleft nearly horizontal; second  
dorsal and anal obtuse. Sicyopus

ddd.<sup>2</sup> Two lower canines; mouth cleft  
nearly vertical. Gobiopterus



Genus Luciogobius Gill

572

Luciogobius Gill, Proc. Acad. Nat. Sci.  
Philadelphia, p. 146, 1859. (Type  
Luciogobius guttatus Gill, monotypic.)

Gobiopus Gill, Ann. Mag. Nat. Hist.  
London, ser. 4, vol. 14, p. 160, 1874. (Atypic.  
no description.)

Expedio Snyder, Proc. U. S. Nat. Mus.,  
vol. 36, p. 606, 1909. (Type Expedio  
parvulus Snyder, orthotypic.)

Inu Snyder, op. cit., p. 607, 1909. (Type  
Inu koma Snyder, orthotypic.)



Body very elongate, little compressed,  
 anteriorly subcylindrical, posteriorly  
 compressed. Head little depressed,  
 or little compressed. Snout  
 subequal with eye. Eyes advanced,  
 in front half of head. Mouth  
 curved, large, lower jaw large  
 or prominent, or jaws subequal.  
 Teeth simple, in several rows  
 or narrow band, outer row  
 enlarged, or outer row of lower  
 jaw extends only to half of jaw,  
 or series may be uniserial. <sup>no</sup>  
 canines. Tongue bilobate. <sup>cheeks swollen.</sup> Body  
 interorbital width equals eye.  
 Gill opening not continued forward  
 below. Isthmus wide. Inner  
 edge of shoulder girdle without  
 fleshy flaps. Body naked, or  
 covered with small cycloid scales  
 on hind part of tail. First  
 dorsal wanting, second dorsal



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with 9 to 13 rays. Anal rays 10 to 12. Caudal rounded. Pectoral <sup>with or</sup> without <sup>a few</sup> free silk like <sup>upper</sup> rays. Ventrals united, very small, under pectorals. Japan.

Analysis of Species

- a.<sup>1</sup> Imm. Posterior part of body scaly.
- b.<sup>1</sup> Head with conspicuous dermal ridges homa
- b.<sup>2</sup> Dermal ridges absent ama
- a.<sup>2</sup> Scales absent.
- c.<sup>1</sup> Luciogobius. Ventral sucker present. guttatus
- c.<sup>2</sup> Expedio. No ventrals or ventral sucker. parvulus



Luciogobius koma (Snyder)

Inu koma Snyder, Proc. U. S. Nat. Mus.,  
vol. 36, p. 607, 1909 (type locality,  
Misaki, Kanagawa - Iken); vol. 42,  
pl. 60, fig. 2, 1912 (types). - Jordan,  
Yanaka, Snyder, Journ. College Sci. Tokyo,  
vol. 33, art. 1, p. 362, 1913 (reference).

Luciogobius guttatus koma Tomiyama,  
Jap. Journ. Zool., vol. 7, no. 1, p. 52, 1936  
(Konakama; Misaki; Motomura;  
Simoda).



Depth  $7\frac{1}{4}$ ; head  $3\frac{2}{5}$ . Snout 5 in head from snout tip; eye 8,  $1\frac{2}{3}$  in snout; maxillary reaches beyond eye space equal to its diameter, length  $2\frac{2}{5}$  in head from snout tip; mouth cleft but little inclined from horizontal lower jaw little protruded in front; band of minute teeth in each jaw, with outer enlarged row; tongue notched in front; interorbital 9, slightly concave, with narrow transverse ridge. Gill opening  $3\frac{1}{8}$ , greater than basal pectoral width.

Head and trunk naked, tail laterally and posteriorly, and caudal peduncle, covered with minute cycloid scales.

D. 11, fin height  $2\frac{4}{5}$  in total head length; A. 11, fin height  $2\frac{4}{5}$ ; caudal  $1\frac{3}{4}$ , convex behind; least depth of caudal peduncle  $2\frac{3}{4}$ ; pectoral  $1\frac{7}{8}$ , rays 18;



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ventral rays 5, 5, fin  $2\frac{1}{5}$  in  
total head length.

Light brown, dotted with  
darker, and still darker on  
snout and caudal base.  
Fins pale, vertical fins and  
pectoral with small darker  
spots.

Japan.

U. S. N. M., no. 62955. Misaki,  
Japan. Albatross Expedition.  
Length 39 mm. Type.



Luciogobius ama (Snyder)

Imu ama Snyder, Proc. U. S. Nat. Mus.,  
vol. 36, p. 607, 1909 (type locality, Misaki,  
Kanagawa-ken); vol. 42, pl. 60, fig. 3,  
1912 (type). — Jordan, Tanaka, Snyder,  
Journ. College Sci. Tokyo, vol. 33, art. 1,  
p. 362, 1913 (reference).

Luciogobius guttatus ama Tomiyama,  
Jap. Journ. Zool., vol. 7, no. 1, p. 53,  
1936 (reference).



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Depth  $5 \frac{4}{5}$ ; head  $3 \frac{1}{3}$ . Snout  $4 \frac{1}{2}$  in head; eye  $9 \frac{1}{4}$ ,  $1 \frac{4}{5}$  in snout; mouth little inclined from horizontal, begins in front well below level of lower eye edge, extends back half an eye diameter behind eye, length  $2 \frac{1}{2}$  in head from snout tip, lower jaw with little projecting in front; teeth in bands in jaws, outer row little enlarged and wide set; tongue notched in front; interorbital little greater than snout, 4 in head from snout tip, eye entering upper profile. Gill opening  $2 \frac{1}{2}$  in head from snout tip.

Head, predorsal, back, breast and belly scaleless. Sides of trunk posteriorly and tail with minute cycloid scales. D. 9, fin height  $2 \frac{1}{2}$  in total



head length; A. 10, fin height  
 $2\frac{3}{4}$ ; caudal  $2\frac{1}{8}$ , convex behind;  
 least depth of caudal peduncle  
 $2\frac{1}{5}$ ; pectoral 17 or 18, fin 2  
 in total head length; ventral  
 $2\frac{3}{4}$ , rays I, 5.

Light brown. Head with  
 many close set darker brown  
 spots, also trunk and upper  
 parts of tail. Vertical fins  
 and pectoral with numerous,  
 small, close set, dark spots.

Japan.

U. S. N. M., no. 62956. Misaki,  
 in tidepool. Albatross Collection.  
 Length 40 mm. Type.



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Luciogobius guttatus Gill

Luciogobius guttatus Gill, Proc. Acad.

Nat. Sci. Philadelphia, p. 146, 1859 (copied).  
Günther, Cat. Fishes Brit. Mus., vol. 3, p. 152, 1861

(type locality, Shimoda)  
dachner, Sitzb. Ber. Akad. Wiss. Wien,  
vol. 80, pt. 1, p. 144, 1879 (Yokohama).

— Jordan and Snyder, Proc. U. S. Nat.

Mus., vol. 24, p. 123, figs. 29-30, 1901

(Tokyo Bay; Hakodate; Wakanoura;  
Annot. Zool. Japon., vol. 3, p. 115, 1901 (Yokohama)

Same; Nagasaki) — Franz, Abhandl.

Ber. Akad. Wiss. vol. 4, Suppl. Band 1,

p. 66, 1910 (Ito; Sagami Bay). — Snyder,

Proc. U. S. Nat. Mus., vol. 42, p. 445, 1912

(Mororan, Hakodate, Same, Aikawa, Misaki,  
& Shimoda, Same, Tanegashima)

— Jordan, Tanaka, Snyder, Journ. College Sci., Tokyo, vol. 33, art. 1, p. 362, 1913 (reference).

Luciogobius guttatus guttatus Tomiyama,

Jap. Journ. Zool., vol. 7, no. 1, p. 51, fig. 10,

1936 (Takanosuna; cave of Daikon-jima,

Simane-ken; artesian well Gobo; Misaki-

mura; Uwajima).

Luciogobius elongatus Regan, Ann. Mag. Nat.

Hist. London, ser. 7, vol. 15, p. 23, 1905

(type locality, Inland Sea of Japan)

(elongate, example). — Snyder, op. cit., vol. 42,  
p. 445, 1912 (Tanegashima).



— Jordan, Tanaka, Snyder, op. cit.<sup>582</sup>  
(reference).

Depth  $6\frac{1}{4}$  to  $9\frac{1}{5}$ ; head  $3\frac{7}{8}$  to 4. Snout  $4\frac{1}{2}$  to  $4\frac{2}{3}$  in head from snout tip; eye  $7\frac{2}{3}$  to 8,  $1\frac{1}{2}$  to  $1\frac{3}{4}$  in snout; mouth but little inclined from horizontal, begins in front level, or slightly below level, of lower eye edge, reaches opposite or little behind hind eye edge, lower jaw protruded in front; teeth in narrow bands in jaws, minute, uniform; tongue notched in front; interorbital little concave, eye entering upper profile off head. Gill opening little less than pectoral base depth, length  $3\frac{4}{5}$  to 4 in head from snout tip.

No scales or barbels.

D. 13, fin height  $3\frac{3}{4}$  to  $3\frac{7}{8}$



in total head length; A. 12,  
fin height 4 to  $4\frac{1}{5}$ ; caudal  
 $1\frac{3}{4}$  to  $1\frac{4}{5}$ , convex behind;  
least depth of caudal peduncle  
 $2\frac{2}{5}$  to  $3\frac{1}{5}$ ; pectoral  $1\frac{3}{4}$  to  
 $1\frac{4}{5}$ , rays 17 to 19; ventral  
rays I, 5, fin length 4 to 5 in  
total head length.

Dull brownish or olive,  
due to minute dark dots,  
these more spaced and lighter  
or disappearing below, so color  
paler. Upper parts, dorsal and  
caudal marked with innumerable  
small, close set, rounded whitish  
spots. Caudal with several slightly  
darker transverse waved bands.  
Anal pale to whitish. Pectoral  
brownish, sometimes few small  
whitish spots above. Ventral  
pale to whitish.

Japan. Tomiyama has  
noted important variations,



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as the species aside from being  
marine ~~is~~ <sup>has</sup> also <sup>been</sup> sometimes found  
in <sup>stream,</sup> caves or artesian wells.

"The specimens collected from  
the shore exhibit variations  
in the general form of body,  
proportion of head and other  
characters. The albinos from  
the Cave of Daikon - zima have  
fewer dorsal and anal rays,  
larger head, the eyes degenerated  
more or less, and no free  
pectoral rays. The specimens  
from the artesian well have  
the elongate body, fewer dorsal  
and anal rays, the eyes  
covered by skin, and no free  
pectoral rays."



One example. Same, Japan.  
Albatross Expedition 1906. Length  
46 mm. (with 71411 & V. h. m.)



U. S. N. M., no. 49906. Hakodate,  
Japan. U. S. Jordan and J. D. Snyder.  
Length 58 to 78 mm. Three  
examples.

U. S. N. M., no. 49935. Wakanoura,  
Kii, Japan. U. S. Jordan and J. D.  
Snyder. Length 33 mm.

U. S. N. M., no. 71389. Aikawa,  
Rikuzen, Japan. Albatross Expedition  
1906. Length 49 to 59 mm. Three  
examples.

U. S. N. M., no. 71432. Misaki,  
Sagami, Japan. Albatross  
Expedition 1906. Length 27 to 51 mm.  
Seventeen examples.

U. S. N. M., no. 71477. Same,  
Japan. Albatross Expedition 1906.  
Length 40 to 63 mm. Twelve examples.

U. S. N. M., no. 71476. Tanegashima  
Island, Japan. Albatross  
Expedition 1906. Length 27 to 53 mm.  
Fifteen examples.



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U. S. N. M., no. 71478. Tanegashima  
Island, Japan. Albatross  
Expedition 1906. Length 25 to 42  
mm. Six examples. As  
Luciogobius elongatus.

U. S. N. M., no. \_\_\_\_\_ Misaki,  
Japan. Albatross Expedition 1906.  
Length 39 mm. (With U. S. N. M.,  
no. 70754.)



U. S. N. M., no. 71499. Shimonoseki  
Japan. Albatross Collection 1906.  
Length 31 to 50 mm. Nine examples.

U. S. N. M., no. 71502. Mororan,  
Japan. Albatross Collection 1906.  
Length 70 mm. July 6, 1906.

U. S. N. M., no. 105247. Jehol,  
Peter the Great Bay. A. A.  
Taranetz. Length 49 to 54 mm.  
Two examples. August 24, 1928.



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Luciogobius parvulus (Snyder)

Expedio parvulus Snyder, Proc. U. S. Nat. Mus., vol. 36, p. 607, 1909 (type locality, Misaki, Kanagawa-ben); vol. 42, p. 445, pl. 61, fig. 1, 1912 (types). — Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, art. 1, p. 363, 1913 (reference).

Luciogobius guttatus parvulus Tomiyama, Jap. Journ. Zool., vol. 7, no. 1, p. 51, 1936 (Konahama, Hukui-ben; Misaki, Kanagawa-ben).

~~Differs from Luciogobius guttatus in the absence of the ventral nuchal, though in agreement in the absence of scales. Length 45 mm.~~



Depth  $10\frac{1}{5}$ ; head  $5\frac{1}{4}$ . Snout  $3\frac{1}{2}$  in head from snout tip; eye 8,  $2\frac{2}{3}$  in snout; mouth maxillary reaches  $\frac{1}{2}$  in eye, length  $2\frac{1}{4}$  in head from snout tip; mouth cleft little inclined, begins in front slightly below level of lower eye edge, lower jaw projecting in front; teeth in narrow band in upper jaw, outer row enlarged, and lower teeth uniserial; tongue notched in front; interorbital concave, eye entering upper profile of head. Gill opening wide as pectoral basal width, length  $2\frac{3}{4}$  in total head length.

Head and body naked.  
D. 10, fin height 4 in total head length; A. 11, fin height 4; caudal  $1\frac{3}{5}$ , convex behind; least depth of caudal peduncle 2; pectoral  $2\frac{1}{2}$ , rays 14, ventral rays. Vent nearly midway between



pectoral and caudal bases).<sup>591</sup>

Color dull yellowish or brownish, with very numerous close set small dark spots or specks, mostly on upper surfaces.

Japan. Known by the absence of the ventral fins.

U. S. N. M., no. 62954. Misaki,  
Japan. Albatross Collection.  
Length 37 mm. Type.



Genus Leucopsarion Hilgendorf <sup>592</sup>

Leucopsarion Hilgendorf, Monatsb. Akad.  
Wiss. Berlin, p. 339, 1880. (Type  
Leucopsarion petersii Hilgendorf,  
monotypic.)



Body very elongate, little compressed.  
Head little depressed. Snout  
subequal with eye. Eyes advanced,  
in front half of head. Mouth  
oblique. Teeth in several rows,  
outer enlarged, no canines.  
Tongue notched. Cheeks swollen.  
Bony interorbital equals eye.  
Gill openings extend forward  
below. Isthmus narrow. Inner  
edge of shoulder girdle without  
fleshy flaps. Body naked,  
transparent. Head naked.  
First dorsal absent. Second  
dorsal with 12 or 13 rays.  
Anal longer than second dorsal,  
its origin before second dorsal origin.  
Caudal rounded. Pectoral without  
free silk like rays. Ventrals  
united, very small.



Leucopsarion petersii Hilgendorf <sup>594</sup>

Leucopsarion petersii Hilgendorf,  
Monatsb. Akad. Wiss. Berlin, p. 340,  
fig., 1880 (type locality, "südliche  
Japan; Nordinsel Yezo").

Leucopsarion petersii Jordan and Snyder,  
Proc. U. S. Nat. Mus., vol. 24, p. 125, 1901  
fig. 31, 1901 (Niigata; Hiroshima);  
Tomiyama, Jap. Journ. Zool., vol. 7, no.  
1, p. 54, 1936 (Aomori to Kagoshima).  
(Annot. Zool. Japon., vol. 3, p. 115, 1901 (streams  
S. Japan). — Jordan, Tanaka, Snyder,  
Journ. College Sci., Tokyo, vol. 33,  
part. 1, p. 363, fig. 319, 1913 (reference).



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Depth  $7\frac{1}{2}$  to  $7\frac{2}{3}$ ; head  $4\frac{4}{5}$  to  $5\frac{1}{4}$ , width  $1\frac{4}{5}$ . Snout  $3\frac{1}{2}$  to 4 in head from snout tip; eye 4 to  $4\frac{3}{4}$ ,  $1\frac{1}{8}$  to  $1\frac{1}{2}$  in snout, subequal with interorbital; maxillary reaches  $\frac{1}{2}$  to  $\frac{2}{3}$  in eye, length 2 to  $2\frac{3}{5}$  in head from snout tip; mouth cleft rather large, oblique, begins on level with middle of eye, lower jaw little protruded; teeth uniformly uniserial in jaws, conic, slightly recurved; interorbital low, eye not entering upper profile. Head and body naked.

D. 13 or 14, fin height 2 to  $2\frac{1}{5}$  in total head length; A. 17 or 18, fin height 2; caudal  $1\frac{1}{2}$ , truncate or slightly emarginate behind; least depth of caudal peduncle  $2\frac{1}{5}$  to  $2\frac{3}{4}$ ; pectoral  $1\frac{1}{8}$  to  $1\frac{2}{5}$ , rays 14 or 15;



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ventral rays I, 5, length 3 to 4  
 $\frac{2}{3}$  in total length of head.

In life translucent, in  
alcohol becoming whitish. Dark  
dots on lips, occiput, interorbital,  
opercles and on tail along anal  
base.

Japan.



U. S. N. M., no. 49965. Echigo, near  
Niigata, Japan. D. S. Jordan  
and J. D. Snyder. Length  
39 to 43 mm. Four examples.



Genus Mastichthys H. M. Smith

Science, new ser., vol. 15, p. 30, Jan 3, 1902;

Mastichthys H. M. Smith, Bull. Bur.

Fisher., vol. 21, p. 167, 1901, (Type

Mastichthys luzonensis H. M. Smith,

monotypic.)



Body nearly transparent, elongate, compressed. Snout  $\frac{2}{3}$  of eye. Eyes large, advanced or in front half of head. Mouth oblique, lower jaw prominent. Teeth uniserial in each jaw. Interorbital  $\frac{1}{2}$  diameter of eye. Scales 23 or 24 in axial lateral series, ctenoid. Dorsal fins separate, first with 3 weak spines and a rudiment adnate to first spine, fin very low, second fin with 7 to 9 rays. Anal rays 9 to 11. Caudal pointed,  $\frac{5}{6}$  of head. Pectoral without free silk like rays. Ventrals united, short.

Philippines. Minute gobies from Lake Buhi.



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Mastichthys luzonensis H. M. Smith

Mastichthys luzonensis H. M. Smith,  
Science, new ser., vol. 15, p. 30, <sup>Jan. 3,</sup> 1902  
(type locality, Lake Buhi,  
Philippines Islands); Bull. U. S.  
Fish Comm., vol. 21, p. 169, fig. 1, 1901  
(1902). — Jordan and Richardson,  
Philippine Journ. Sci., p. 48, 1910  
(reference). — Herre, Gobies of  
Philippines, p. 95, pl. 7, fig. 1, 1927.  
(Lake Buhi). — Roxas and Martin,  
Depart. Agric. Comm. Manila, Tech.  
Bull. 6, p. 235, 1937 (reference).



601

Depth  $3\frac{9}{10}$  to  $4\frac{2}{3}$ ; head  $3\frac{1}{5}$  to  $3\frac{1}{3}$ . Snout <sup>5 to</sup>  $5\frac{1}{2}$  in head from snout tip; eye  $3\frac{1}{4}$  to  $3\frac{2}{3}$ , greater than snout,  $1\frac{3}{4}$  to 2 in interorbital; maxillary reaches  $\frac{1}{4}$  to  $\frac{1}{3}$  in eye, length  $2\frac{1}{2}$  to  $2\frac{2}{3}$  in head from snout tip; mouth large, begins in front about level with upper pupil edge, mandible projecting; teeth short, uniserial, numerous in jaws; interorbital low, eye not quite entering upper profile.

Scales 23 or 24 in lateral series; 6 transversely between second dorsal and anal. Scales deciduous, only on trunk and tail, on predorsal posteriorly, prepectoral and breast, head entirely naked.

D. III — I, 6 to 8, second spine  $5\frac{1}{5}$  to  $8\frac{2}{3}$  in total head length, first branched



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ray  $2\frac{1}{3}$  to  $2\frac{2}{3}$ ; A. I, 9 or 10,  
first branched ray  $2\frac{7}{8}$  to 3;  
caudal  $1\frac{1}{8}$  to  $1\frac{1}{10}$ , convex behind.  
least depth of caudal peduncle  
 $2\frac{1}{4}$  to  $2\frac{2}{5}$ ; pectoral  $1\frac{3}{7}$  to  
 $1\frac{1}{2}$ , rays 15; ventral rays I, 5,  
fin  $2\frac{2}{3}$  to  $2\frac{4}{5}$  in total head  
length. Anal papilla of male  
 $2\frac{1}{2}$  in total head length,  
of female  $5\frac{1}{2}$  more robust  
and less pointed.

In alcohol whitish, trans-  
parent in life. Back and head  
with some dark dots above.  
Snout or muzzle dusky with  
dark dots. Dark bar down  
from lower eye edge close behind  
hind end of maxillary.

Philippines. Herre has  
the following interesting items:  
"This fish is probably next  
to the smallest known vertebrate,  
having an average length of 12.5



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millimeters, the males somewhat smaller than the females, averaging shorter and slenderer.

♂ is a little larger than Pandaka pygmaea sp. nov.; there are several other species of fish nearly as short, notably of the genus Eviota; but all of them, as far as I am aware, are bulkier. Males are sometimes mature when under 10 millimeters in length, their maximum size being 13.5 millimeters. Occasionally one finds ripe females a little over 11 millimeters long, while the largest I have examined are only 14 millimeters in length.

"This tiny goby occurs in vast numbers in the lagoon, from near the shore line out to where the water is at least



10 or 12 meters deep, and it breeds throughout the year. According to the inhabitants of Buhit, the eggs float at the surface of the lake, covering large areas, especially during sunny days in March and April. Specimens collected by me in the latter part of September, and by Mr. Alejo G. Lince in January, were breeding. When hatched the young swim at first at the surface, but after a short time go to the bottom to live.

"I believe that tinarapan rise to the surface with the diurnal movement of the plankton on which they feed. The unusual method used to capture them is based on this habit and provides a roosting place on which they gather in swarms.



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From time immemorial they have been caught in large quantities by the people living about the lake and are regarded by them as a staple article of diet of superior delicacy. The right to catch them is let by the municipality to the highest bidder, who then has the exclusive fishing privilege for such part of the lake as he has leased.

"A full-grown bamboostalk, 10 meters or more in length, is cut, the butt sharpened, the branches removed except the 3 or 4 innermost twigs, and a palm leaf wrapped around the topmost meter or two. The contrivance, called abung, is then set firmly into the lake bottom where the water is deep enough to leave a little of the tip and a spur



of the palm leaf protruding above the surface so the fisherman can find it easily. During the day the sinarapan come to rest up on the palm leaf. About the middle of the afternoon the fisherman goes out to the abung which he has scattered about in his leasehold and begins to fish with a triangular net, or sarap, made of sinaramay, a kind of cloth made of Tabacá fiber. The sarap is mounted on a Y-frame bamboo and with it the abung is swept from the bottom of the palm leaf to the top, and usually from a half liter to liter of sinarapan are caught on each. The fish are dumped into a large basket from which the water drains at once, leaving



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what appears to be a mass of  
some strange wriggling, skipping,  
transparent, insect larvae, in  
which the large black eyes  
are the only conspicuous part.

"The sinarapan cannot  
be caught along shore, though  
they can readily be seen there,  
because in the shallow water  
they are protected by the dense  
masses of Potamogeton, water  
hyacinth, algae, and other plants  
amid which they dwell, and  
where a net cannot be used.

"mingled with the sinarapan  
and feeding upon them are  
larger fishes of various kinds,  
so that occasionally eels, Coelacanth  
(Hemiramphus coelacanthus H. M. Smith),  
and several kinds of larger  
gobies are caught when the  
fisherman sweeps his net over  
an abung.



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"Sinarapan are fried in oil,  
or boiled with vegetables,  
and have a delicious flavor.  
When more are caught than  
the local market demands the  
surplus is salted or dried  
in cakes and exported to the  
neighboring towns in Camarines  
Sur and Albay Provinces.

U. S. N. M., no. 50303. Lake Buhi,  
Luzon, Philippines. July 5, 1901.  
Dr. F. W. Richardson. Length.

U. S. N. M., no. 50304. Lake Buhi,  
Luzon. July 5, 1901. Dr. F. W.  
Richardson.



609

Genus Astrabe Jordan and Snyder

Astrabe Jordan and Snyder, Proc. U. S.  
Nat. Mus., vol. 24, p. 119, 1901. (Type  
Astrabe lactisella Jordan and Snyder,  
monotypic.)

Clariger Jordan and Snyder, op. cit.,  
p. 120. (Type Clariger cosmurus Jordan  
and Snyder, monotypic.)



## Analysis of Subspecies

a.<sup>1</sup> Body scaly behind pectoral base.

b.<sup>1</sup> Broad white saddle on nape.  
lacticella

b.<sup>2</sup> Longitudinal series of lighter spots from upper end of gill opening to upper part of caudal base.  
exilis

a.<sup>2</sup> Scales on caudal peduncle extend forward in single rows to below spinous dorsal origin at most; distinct dark longitudinal band on side of body.  
cosmurus

a.<sup>3</sup> Scales absent.

c.<sup>1</sup> Three pairs of papillae on snout and tip of chin.  
papillosus

c.<sup>2</sup> No papillae on snout; pair of papillae on tip of chin.  
sirahamaensis



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Body very elongate, little compressed. Head depressed. Eyes advanced in head, subequal with snout. Jaws subequal. Teeth in jaws simple, in several rows, outer row enlarged and in lower jaw only in anterior half, none canines. Tongue bilobate. Some short barbels under eye. Bony interorbital equals eyes. Gill openings not extended forward below, isthmus broad. Inner edge of shoulder girdle with or without 2 papillae like elevations. Body largely naked anteriorly, posteriorly with small, imbedded cycloid scales, mostly on tail but may extend forward far as pectoral fin. Head naked, may have wrinkled or folded skin. Dorsal fins separate, first with 3 spines, second with 11 or



12 rays. Anal with 10 rays.  
Caudal rounded. Pectoral with  
or without some of upper rays free.  
Ventrals united, short, below  
pectoral..

Apparently a single widely  
variable species, grouped  
recently as five species  
by Taniguchi. ~~as set forth~~  
~~below.~~



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Astrabe lactisella Jordan and Snyder

Astrabe lactisella Jordan and Snyder,  
Proc. U. S. Nat. Mus., vol. 24, p. 119, fig.  
26, 1901 (type locality, Misaki,  
Japan). — Snyder, Proc. U. S. Nat.  
Mus., vol. 42, p. 444, Aug. 30, 1912  
(Misaki; Tanegashima — Jordan,  
Tanaka, Snyder, Journ. College Sci.  
Imp. Univ., vol. 33, art. 1, p. 360, fig. 316, 1913.  
Astrabe lactisella lactisella Tomiyama,  
Jap. Journ. Zool., vol. 7, no. 1, p. 53,  
1936 (Konakama; Kominato; Misaki).



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Depth  $4\frac{1}{2}$ ; head 3, width equals body depth. Snout 4 in head, broadly rounded as viewed from above; eye  $8\frac{1}{2}$ ,  $1\frac{3}{4}$  in snout; maxillary reaches opposite hind eye edge, length  $2\frac{4}{5}$  in head; front of mouth begins below level of eye, and lower jaw slightly protruded in front; teeth in jaws simple, even, none canines; nostrils with elevated rims; interorbital 3 in head. Gill opening lateral, not extended forward.

Anterior half of body naked, and posteriorly small, thin, embedded scales and laterally extend forward well towards pectoral base. Row of papillae close below eye and horizontal along infraorbitals; vertical row along front part of opercle.



D. III, 11, second spine  $2\frac{4}{5}$  in total head length; fifth ray 2; A. 10, fifth ray  $2\frac{3}{4}$ ; caudal  $1\frac{1}{4}$ , convex behind; least depth of caudal peduncle  $2\frac{1}{3}$ ; pectoral  $1\frac{2}{5}$ , rays 24; ventral rays I, 5, fin  $1\frac{4}{5}$  in total head length.

Largely black, with broad white contrasted band over predorsal and down below to embrace opercle and basal third of pectoral, to belly behind ventral where narrow. White saddle at interdorsal, another at and before anal origin. Several white spots on hind part of tail and caudal peduncle. Side of head anteriorly, as muzzle and cheek with small white spots. Chest and breast white. <sup>second</sup> dorsal, pectoral and caudal with white spots. Ventral with white margin.



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Japan. A very handsome,  
contrasted little fish, reaching  
a maximum length of 55  
mm. It is marine in habitat,  
and found in rock pools.



U. S. N. M., no. 71404. Tanegashima  
Island, Japan. Albatross  
Expedition 1906. Length 45 mm.

U. S. N. M., no. 71533. Misaki,  
Sagami, Japan. Albatross  
Expedition 1906. Length 32 to 49  
mm. Four examples.



Astrabe exilis (Snyder)

618

Clariger exilis Snyder, Proc. U. S. Nat.  
Mus., vol. 40, p. 544, 1911 (type locality,  
Tanegashima); vol. 42, p. 444, pl. 60,  
fig. 1, 1912 (types). — Jordan, Tanaka,  
Snyder, Annot. Zool. Japon., vol. 33,  
art. 1, p. 361, 1913 (reference). —  
Ebina, Journ. Imp. Fisher. Inst.,  
vol. 30, no. 3, fig. 5, Dec. 1934.  
Tokyo,

Astrabe laticella exilis Tomijama, Jap.  
Journ. Zool., vol. 7, no. 1, p. 53, 1936 (Misaki).



Depth  $8\frac{1}{2}$ ; head 4, Snout 5 in head in profile from snout tip; eye 10, 2 in snout; maxillary inclined, extends back nearly opposite hind eye edge, length 3 in head from snout tip; mouth begins little below level of lower eye edge, lower jaw little protruded in front; tongue deeply notched in front; bands of teeth in jaws, narrow, above outer and inner row enlarged, below inner row gradually enlarged to last on each side which little separated; inter-orbital space  $5\frac{1}{2}$  in head from snout tip, flat. Gill opening lateral.

Head and most of body anteriorly naked, or scales on middle of sides <sup>extend forward</sup> opposite spinous dorsal. Row of several fleshy barbels under eye. Pair of short,



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broad, fleshy flaps at symphysis of mandible.

D. III - 11, first spine  $5\frac{1}{5}$  in total head length, fifth ray  $2\frac{1}{6}$ ; A. 11, fifth ray 2; caudal  $1\frac{1}{5}$ , convex behind; least depth of caudal peduncle  $2\frac{1}{2}$ ; pectoral  $1\frac{2}{5}$ , rays 18; ventral rays I, 5, fin length  $2\frac{3}{4}$ .

Broad light brown band nearly covers entire side of body. Last with many variable, small pale or white spots. Head and muzzle above whitish, also under surface of head, chest, breast and belly. Above caudal base marginally, also below, white blotch. Caudal medially and pectoral basally with blackish.

Japan, marine.



U. S. N. M., no. 74583. Tanegashima  
Island, Japan. Albatross  
Collection. Length 21 to 34 mm.  
Six examples. "Cotypes" [= paratypes]  
of Clariger exilis Snyder.

U. S. N. M., no. 68242. Tanegashima,  
Japan. Albatross Collection 1906.  
Length 32 mm. Type.



622

Astrabe cosmurus Jordan and Snyder

Clariger cosmurus Jordan and Snyder,  
Proc. U. S. Nat. Mus., vol. 24, p. 121, fig.  
27, 1901 (type locality, Misaki, Japan).  
— Snyder, Proc. U. S. Nat. Mus.,  
vol. 42, p. 444, 1912 (Hakodate;  
Aikawa; Misaki). — Jordan, Tanaka,  
Snyder, Annot. Zool. Japon., vol. 33,  
art. 1, p. 361, fig. 317, 1913 (reference).  
— Ebina, Journ. Imp. Fisher. Inst., <sup>Tokyo,</sup> vol. 30,  
no. 3, fig. 4 (head), Dec. 1934.  
Astrabe laticella cosmurus Tomiyama,  
Jap. Journ. Zool., vol. 7, no. 1, p. 54, 1936  
(Misaki; Motomura).

(— Sakamoto, Journ. Imp. Fisher. Inst.,  
Tokyo, vol. 27, no. 1, p. 9, March 1932 (Hira-  
hama; Kominato).



623

Depth  $7\frac{3}{5}$ ; head  $3\frac{2}{3}$ . Snout  $5\frac{1}{3}$  in head measured from snout tip in profile; eye  $8\frac{1}{2}$ ,  $1\frac{1}{2}$  in snout; maxillary reaches opposite hind eye edge. Length 3 in head from snout tip; mouth begins slightly below level of eye, lower jaw little protruded in front; tongue notched in front; bands of teeth in jaws narrow, lower with small lateral canine each side; interorbital low, less than orbit. Gill opening lateral, but little more than width of pectoral base.

Head and body largely naked. Median lateral brow of round, cycloid scales along side of caudal peduncle. Row of papillae along infraorbitals, below eye.

D. III-12, first spine 3 in total head length, fifth ray  $3\frac{1}{4}$ ; A. 12, fifth ray  $3\frac{4}{5}$ ; caudal  $1\frac{2}{5}$ .



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convex behind; least depth of  
caudal peduncle 3; pectoral  
 $1\frac{4}{5}$ , rays 18; ventral rays  
I, 5, fin length  $2\frac{3}{4}$  in total  
head length.

White. Broad dark brown  
lateral band, its edges variable,  
from end of snout to caudal  
base. At caudal basally white  
invades dark lateral band  
from upper and lower rudimentary  
caudal rays to leave only narrow  
median dark isthmus which  
expands out on caudal base  
behind, broken as spots and  
bars on hind part of fin.  
Pectoral base dark. Short  
transverse dark bar at end of  
maxillary.

Japan. Rather common.



U. S. N. M., no. 71392. Misaki,  
Sagami, Japan. Albatross  
Expedition 1906. Length 17 to 30  
mm. Fourteen examples. As  
Clariger cosmurus.

U. S. N. M., no. 71430. Aikawa,  
Japan. Albatross Collection.  
Length 28 to 39 mm. Sixteen examples.  
As Clariger cosmurus.



Astrabe papillosus (Ebina)

Clariger papillosus Ebina, <sup>Journ. Imp. Fisher.</sup> ~~Shisankô~~  
<sup>Inst., Tokyo</sup> ~~Reunkyu~~ <sup>Hôkoku</sup>, vol. 30, p. ~~627~~<sup>627</sup>,  
 fig. 3<sup>2</sup>, 1934 (type locality, Kominato,  
 Iiba-ken).

Astrabe laticella papillosa Tomiyama,  
 Jap. Journ. Zool., vol. 7, no. 1, p. 54, 1936  
 (Mitsaki; Motomura).



627

Depth  $6\frac{1}{5}$ ; head  $3\frac{4}{5}$ , width  $1\frac{2}{3}$ . Snout  $4\frac{7}{8}$  in head from snout tip; eye  $8\frac{1}{4}$ ,  $1\frac{2}{3}$  in snout,  $1\frac{1}{4}$  in interorbital; maxillary well inclined, reaches  $\frac{3}{4}$  in eye, length 3 in head from snout tip; mouth begins little below level of eye, lower jaw slightly protruded in front; teeth very small, in narrow band in both jaws; interorbital low. Gill opening lateral, little broader than pectoral base.

Head and body entirely naked. Five fleshy papillous barbels below eye, large one before eye, and pair of broad barbels at snout. Basal canal tubular, its posterior pore very near eye. Pair of barbels at symphysis of mandible. D. III I 13, first spine  $3\frac{1}{2}$  in total head length, second ray



628  
 $2\frac{4}{5}$ ; A. 12, second ray  $2\frac{3}{4}$ ; caudal  $1\frac{3}{5}$ , convex behind; least depth of caudal peduncle  $2\frac{3}{5}$ ; pectoral  $1\frac{4}{7}$ , rays 17; ventral rays I, 5, fin  $3\frac{1}{4}$  in total head length.

Body gray, back and pectorals whitish. Chin and caudal fin mottled with small irregular white spots, abdomen with black spots.

Length 35 mm.

(Ebina.)

Japan. Only known from the type, obtained in a gravelly tide-pool.



Astrabe sirahamaensis (Vakamoto) <sup>629</sup>

Clariger sirahamaensis Vakamoto,  
Journ. Imp. Fisher. Inst., vol. 2 <sup>no. 1</sup>, p.  
9, fig. 1, <sup>march</sup> 1932 (type locality,  
Sirahama, Iba-ken); Ebina,  
Journ. Imp. Fisher. Inst., Tokyo,  
vol. 30, no. 3, fig. 3, Dec. 1934.  
(head)

Astrabe laticella sirahamaensis  
Yamiyama, Jap. Journ. Zool., vol. 7, no. 1,  
p. 54, 1936 (type).



Depth  $7\frac{1}{8}$ ; head  $3\frac{2}{3}$ , snout 4 in head from snout tip; eye  $6\frac{3}{4}$ ,  $1\frac{2}{3}$  in snout; maxillary reaches back  $\frac{1}{2}$  in eye, length  $2\frac{2}{3}$  in head from snout tip; mouth begin little below level of lower eye edge, lower jaw protruding in front; tongue deeply notched in front; broad; teeth very small, arranged in narrow bands in both jaws; interorbital flat, more than twice eye. Gill opening lateral, broader than pectoral base.

Head and body entirely naked. Pair of short flattened barbels before eye, nearer snout tip, and also pair at symphysis of mandible.  
D. III - 9, first spine 5 in total head length, second ray  $2\frac{3}{5}$ ; A. 9, second ray  $2\frac{4}{5}$ ; caudal  $1\frac{2}{5}$ , convex behind; least depth of caudal peduncle  $2\frac{1}{4}$ ; pectoral  $1\frac{3}{4}$ , rays 19; ventral rays I, 5, fin  $3\frac{1}{3}$  in total head length.



631

Body and fins, except pectoral, dark gray. Pectoral white, except base, and mottled with irregular small black spots. Second dorsal, anal and caudal edges white. At upper and lower caudal edges, near base, small round white spots, also few small ones on body. Occiput with pair of small white spots, widely separated.

Length 33 mm. (Sakamoto.)  
Japan. Only known from the type, described above, a female.



632

Genus Eutaenichthys Jordan and Snyder

Eutaenichthys Jordan and Snyder,  
Proc. U. S. Nat. Mus., vol. 24, p. 122,  
1901. (~~type locality~~ Type Eutaeni-  
ichthys gilli Jordan and Snyder,  
monotypic.)

Body elongate, compressed. Head short. Mouth small, oblique. Teeth simple, in both jaws in 2 or 3 rows, no canines. No barbels. Interorbital space narrow. Inner edge of shoulder girdle without fleshy flaps. Body covered with rudimentary, embedded, rather small cycloid scales. First dorsal with 3 spines, second dorsal with 17 or 18 rays. Anal rays 12. Dorsal much longer than anal, begins before latter.



633  
Caudal pointed. Pectoral without  
free silk-like rays. Ventrals  
well developed.



634

Eutaenichthys gilli Jordan and Snyder

Eutaenichthys gilli Jordan and Snyder,  
Proc. U. S. Nat. Mus., vol. 24, p. 122,  
fig. 28, 1901 (type locality, Tone River  
near Tokyo, Japan). Taniyama,  
Jap. Journ. Zool., vol. 7, no. 1, p. 54,  
1936 (Haneda; Zyunityo-gata;  
Kusigahama).

Depth  $10\frac{1}{2}$ ; head 6. Snout  $7\frac{1}{5}$   
in head, blunt; eye 5, greater  
than snout or interorbital;  
maxillary reaches  $\frac{1}{2}$  in eye,  
length  $4\frac{1}{5}$  in head; mouth  
small, but little inclined,  
begins in front well below  
level of eye; teeth in 2 or 3  
rows in jaws, uniform;  
interorbital space narrow, low,  
upper part of eye touches upper  
profile line. Gill opening greater



(635)

than pectoral base, its length  $2 \frac{1}{5}$  in head, occupies only last fourth in head length.

Head scaleless. Trunk and tail with small, rounded, cycloid, scattered scales, apparently little evident or absent on abdomen below.

~~Dorsals~~ well separated,  
D. III - 18,  $3 \frac{1}{3}$  in head,  
second spine second ray 3, seventeenth ray 2;  
A. 11, origin below base of  
eighth dorsal ray, first ray  $3 \frac{1}{2}$   
in total head length, sixth ray  
2; caudal  $5 \frac{7}{8}$  in rest of fish,  
least depth of caudal peduncle  
3 in head; pectoral  $1 \frac{1}{4}$ , rays  
17; ventral  $1 \frac{1}{5}$ .

In alcohol pale brownish,  
whitish below. Broad lateral  
band made up of brown to dark  
brown dots, whole length of  
fish and reflected out on caudal



636  
medially. Scattered dark dots  
all along median dorsal area.  
Fins, other than noted, all  
pale.

Japan.



U. S. N. M., no. 49921. Tone River,  
near Tokyo, Japan. Dr. K.  
Kishinouye. Length 36 mm.  
"Cotype" [= paratype].



Genus Mirogobius Herre

Mirogobius Herre, Gobies of Philippines, p. 91, 1927. (Type Mirogobius stellatus Herre, orthotypic.)

Body elongate, compressed. Head partly cylindrical. Snout long as eye. Eyes anterior, in front half of head. Mouth large, very oblique, lower jaw prominent. Teeth in single row, long, stout, widely spaced, curved. Lower jaw with pair of postsymphysial canines, sometimes <sup>interorbital width equals eye.</sup> only developed in males. Tongue notched. Body naked, or with a few cycloid scales on caudal peduncle. Dorsal fins separate, first with 4 or 5 spines (6 in figure), second with 8 rays. Anal with 9 to 11 rays. Caudal rounded. Ventrals small.



Analysis of Species

a<sup>1</sup> Anal I, 10; pair of canines in lower jaw behind symphysis; color darkened by many black stellate spots. stellatus

a<sup>2</sup> Anal I, 8 or 9; lower canine behind symphysis in males only; females with minute teeth, large in males; color yellowish white. lacustris



Mirogobius stellatus Herre

Mirogobius stellatus Herre, Gobies of Philippines, p. 92, pl. 6, fig. 4, 1927 (type locality, Small mountain lake beside the sitio Lanigay, Polangui municipality, Albay Province).  
 — Roxas and Martin, Dep. Agric. Comm. Manila, Techn. Bull. 6, p. 237, 1937 (reference).

Depth  $4 \frac{1}{3}$  to  $5 \frac{1}{4}$ ; head  $3 \frac{1}{5}$  to  $3 \frac{2}{5}$ , width  $1 \frac{1}{2}$ . Snout  $3 \frac{4}{5}$  to  $3 \frac{7}{8}$  in head from snout tip; eye  $3 \frac{4}{5}$  to  $3 \frac{7}{8}$ , subequal with snout or interorbital; maxillary reaches to or  $\frac{1}{2}$  in eye, length 2 in head from snout tip; mouth subvertical, begins in front opposite or slightly below level of lower edge of eye, lower jaw but slightly protruded; interorbital



641

low, eye entering upper profile of head.

Body naked, covered with tough skin, often lined to simulate presence of scales, and under a lens none revealed except in largest males 2 to several tiny cycloid scales at caudal base or on caudal peduncle.

D. IV or V - 17, spines very slender and second  $2\frac{1}{3}$  in total head length, third branched ray  $2\frac{1}{10}$ ; A. I, 10, ninth ray  $2\frac{1}{5}$ ; caudal  $1\frac{2}{5}$ , convex behind; least depth of caudal peduncle  $2\frac{4}{5}$ ; pectoral  $1\frac{1}{2}$ , rays 19; ventral rays I, 5, fin  $2\frac{3}{4}$  in total head length. Anal papilla short and thick in female, long and pointed in male.

In alcohol yellowish to whitish, more or less thickly spattered over sides and dorsally with small black stellate or dendritic



642

spots, with clear linear space extending longitudinally from pectoral axil to caudal medially. Top of head, snout, and cheeks more or less blackish or black marbled or spotted. Lips black. Some specimens not otherwise different nearly white, with black spots on head and body reduced to fine specks. First dorsal finely speckled with dusky, or may be entirely colorless. Other fins, except colorless ventrals, more or less thickly dotted with fine black specks.

Length 12 to 21 mm.

(Herre.)

Philippines. "This species reaches maturity when about 15 millimeters long, females of that length having the abdomen enormously distended with eggs ready to spawn. Unlike most of



the other minute Philippine 643  
gobies, this species is firm and  
tough, its fins not readily  
breakable, and it endured  
much handling without harm.



644

Mirogobius lacustris Herre

Mirogobius lacustris Herre, Gobies  
of Philippines, p. 93, 1927 (type  
locality, Laguna de Bay near  
Calamba, Los Baños, Lumbang,  
Santa Cruz); Fishes Herre 1931.  
Philippine Exped., p. 81, 1934 (Laguna  
de Bay); — Roxas and Martin,  
Depart. Agric. Comm. Manila, Techn.  
Bull. 6, p. 237, 1937 (reference).  
(Fish. Herre Philippine Exped. 1936 p. 81 (1934)  
(Laguna de Bay)).

Depth  $4\frac{2}{5}$  to  $4\frac{4}{5}$ ; head  $3\frac{4}{5}$ ,  
wider than body. Snout very  
wide and blunt in males,  
narrower but equally blunt  
in females, subequal with eye,  
length  $4\frac{1}{10}$  to  $4\frac{3}{5}$  in head; eye  
elevated; maxillary reaches below  
front or anterior part of eye;  
mouth well oblique, with prominent  
projecting lower jaw; in males



645

teeth long, stout, curved, wide spaced, lower all visible when mouth closes; pair of canines behind symphysis of lower jaw, back of outer row of teeth; teeth in females minute, uniserial, without pair of inner lower canines, none visible when mouth closes; interorbital convex, greater than eye diameter. Skin naked, with fine longitudinal striae.

D. V (rarely IV) — I, 7, first and second spines longest, slender, fifth much shorter, fin reaching half way to second dorsal; front dorsal rays twice as stout as first dorsal spine, highest posteriorly except last, which very short. A. I, 9 or 8, like second dorsal, <sup>only lower,</sup> angulate posteriorly, falling far short of caudal when depressed; caudal subtruncate, shorter



646

than head; pectoral pointed,  
subequal to or little shorter  
than head; narrow ventrals  
very short. Basal portion  
subtubulate,  $2 \frac{2}{3}$  in head,  
reach much less than half way  
to anal papilla. Last very short  
and thick in females, thread  
like and pointed in males).

In alcohol yellowish white  
or rich cream. Eye silvery  
black to steel gray. Most  
specimens with a few black  
specks on snout and chin.  
Some with specks scattered over  
back of head and row along  
anal base. Fins colorless,  
caudal with indications of  
crossbars due to rows of minute  
specks.

Length 15 to 19 mm. (Here.)

Philippines. Caught in large  
quantities in Laguna de Bay



647  
... and in fact all around  
the lake shore during the rainy  
season. At other times the  
shrimp fishermen catch the fish  
in limited quantities, mixed  
with the common lake shrimp.  
It is probable that they live  
on or near the bottom in the  
deeper parts of the lake, and  
are only seen in large schools  
when they come to shoal water  
along shore in the rainy season.

"They are fried in coffee,  
cooked with vinegar, made  
into sinagong, or stew, and  
pickled, and are a greatly  
esteemed delicacy. At times they  
occur in the Manila market."



648

Genus Herreolus H. M. Smith

Herreolus H. M. Smith, Journ. Siam  
Soc. Nat. Hist. Suppl., vol. 8, no. 3,  
p. 190, Sep. 7, 1931. (Type Herrea  
formosa H. M. Smith, virtually,  
as Herreolus proposed to  
replace Herrea).

Herrea (not Whitley 1930) H. M.  
Smith, Proc. U. S. Nat. Mus., vol. 79,  
art. 7, p. 40, 1931. (Type Herrea  
formosa H. M. Smith, monotypic.)

Herreichthys Koumans, Prelim. Rev.  
Gobioid Fishes, p. 163, Nov. 13, 1931.  
(Type Herrea formosa H. M. Smith,  
virtually, as Herreichthys proposed  
to replace Herrea.)



649  
Body elongate, compressed.  
Head blunt. Mouth vertical.  
Teeth in each jaw curved, in  
a single wide-spaced row and  
front teeth in lower jaw elongated.  
Dorsal fins widely separated,  
first dorsal with 5 spines,  
and second dorsal and anal  
with 12 branched rays. Caudal  
rounded. Ventrals narrow,  
pointed, not adnate to abdomen.

Minute gobies resembling  
Microgobius in their scaleless  
body and uniserial teeth in  
both jaws. Microgobius differs  
in the presence of postsymphysial  
lower canine teeth and only 7 to  
9 branched anal rays in the  
second dorsal, besides a reduced  
number of anal rays.



650

Herreolus formosus (H. M. Smith)

Herrea formosa H. M. Smith, Proc.  
U. S. Nat. Mus., vol. 79, art. 7, p. 40,  
1931 (type locality, Taken in a  
rocky tide-pool on Koh Chula  
(Kite Island), off mouth of  
Chantabun River, Gulf of Siam).

Herreolus formosus Suvatti, Index  
Fish. Siam, p. 157, 1936 (reference).



657

Depth 6, body slender, dorsal profile nearly horizontal; head  $4\frac{1}{2}$ . Snout blunt, half of eye; eye more than 3 in head, greater than interorbital space; mouth vertical; single row of curved, well spaced teeth in each jaw, and anterior lower teeth longer.

No scales on head or body.

D. V - I, 12, interdorsal space  $1\frac{1}{2}$  times length of first dorsal base, spines weak and third longest; second dorsal origin in advance of anal, longest rays equal postorbital part of head, fin base  $3\frac{1}{2}$  times that of first dorsal, last ray reaching caudal; A. I, 12, like second dorsal; caudal rounded, short, median rays  $1\frac{1}{2}$  in head; depth of caudal peduncle  $1\frac{1}{2}$  in its length; pectoral broad, bluntly pointed, reaches vertical from last dorsal spine, ventrals equal



postorbital part of head.

Nearly uniform pale olive yellow. Narrow black median dorsal stripe from snout tip to caudal base, extending on caudal and spreading so as to involve upper rays. Broad black lateral band from mouth through lower half of eye to caudal base and then nearly to hind edge of caudal. Lateral band involved lower jaw, and on hind half of body below horizontal axis. Fins pale yellow.

(Smith.)  
H. M.

Siam.

U. S. N. Mus., no. 90324. Koh Phula (Kite Island), off mouth of Chantabun River, Gulf of Siam. March 17, 1930. Dr. H. M. Smith. Length 23 mm. Type.



Herreolus formosus H. M. Smith

Herreolus formosus H. M. Smith,

— Swatti, Index Fish. Siam, p. 157,  
1936 (reference).